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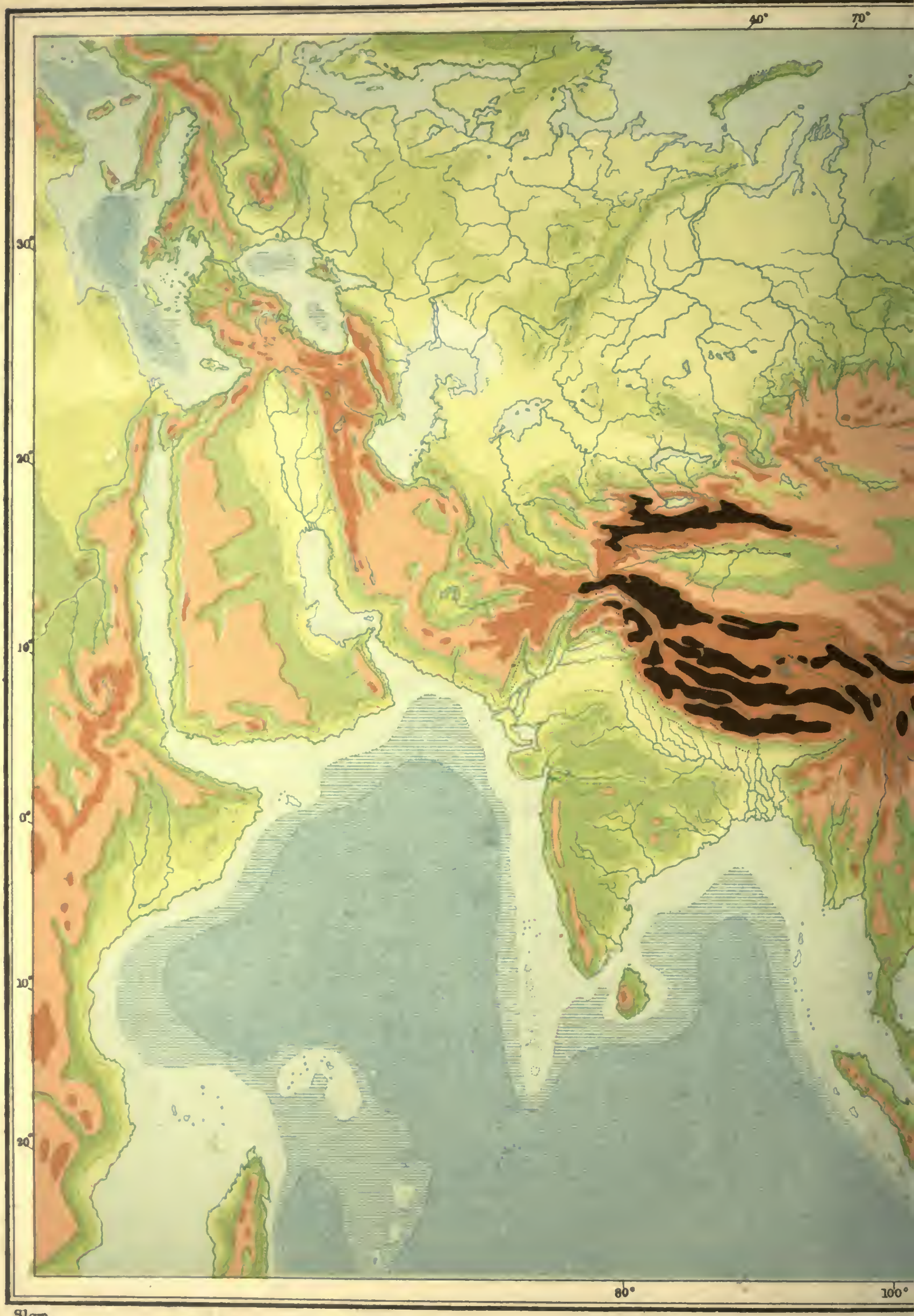

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MAP OF ASIA

ation of the Land above the Level of the Sea.

660 to 1640 Feet | 1640 to 3280 Feet | 3280 to 6560 Feet | 6560 to 16400 Feet | Over 16400 Feet

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THE

EARTH AND ITS INHABITANTS.

ASIA.

BY

ÉLISÉE RECLUS.

EDITED BY

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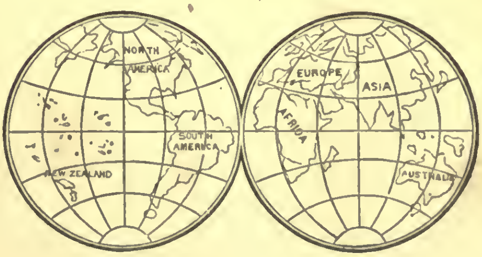
MEMB. OF COUNCIL, ANTHROPOLOGICAL INSTITUTE.

VOL. I.

ASIATIC RUSSIA:

CAUCASIA, ARALO-CASPIAN BASIN, SIBERIA.



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THE EARTH AND ITS INHABITANTS.

ASIATIC RUSSIA.

CHAPTER I.

GENERAL REMARKS ON ASIA.

OF the great divisions of the globe Asia is by far the largest, comprising almost exactly one-third of all the dry land, and exceeding in area even the double continent of the New World. It is one-third larger than Africa, and five times more extensive than Europe, which may in some respects be regarded as one of its peninsular appendages. Excluding the Caspian Sea and the eastern districts of the government of Perm, it has a total area of 16,776,000 square miles, and including Japan, the Philippines, and Malaysia, 17,930,000 square miles.

But if it takes the foremost rank in size, it is far inferior even to Europe in the variety of its peninsular forms, in the development of its coast-line, in the extent to which the ocean inlets, and with them the marine climate, penetrate into the heart of the land; nor does it, like Europe, present the great advantage of geographical unity. Divided by lofty tablelands and old sea-beds into absolutely distinct regions, it embraces vast rainless tracts, where the dryness of the atmosphere, the cold, and even the rarefaction of the air offer great difficulties to the migrations of its inhabitants, the more so that the opposite slopes are not connected together by natural valley routes like those of the Alps. Asia may thus have given birth to many local civilisations, but Europe alone could have inherited them, by their fusion raising them to a higher culture, in which all the peoples of the earth may one day take a part.

PLATEAUX—HIGHLANDS AND LOWLANDS.

COMPARED with the other continents, Asia is essentially the region of tablelands. Were the dry land to subside uniformly, all the other regions of the

globe would have long disappeared, or would be indicated at most by narrow islands and peaks, while the lofty uplands of Central Asia, with the ranges skirting them, still rose above the surrounding waters. The plateaux of Asia, with the regions enclosed by them, form, so to say, a continent within a continent, differing in its climate, its flora, fauna, and inhabitants from the surrounding species. Rising in some places to a height of 20,000 feet and upwards, these plateaux give to the whole of Asia a mean altitude greater than that of the other quarters of the globe. Humboldt calculated the mean of the Asiatic continent at 1,165 feet, which on more recent information Krümmel raises to 1,650 feet, or one-third more than that of Europe.

The Asiatic coast-line is more diversified than that of Africa or South America, especially on the south side, which is varied with large peninsulas, gulfs, and islands. But the central mass, including the plateaux and deserts, presents a great uniformity of outline. This region, limited southwards by the Himalayas, Dapsang, and Karakorûm, almost everywhere presents other lofty ranges—in the west the numerous crests of the Pamir, in the north-west the Tian-shan, in the north the Altaï, in the north-east and east the several chains separated by intervening river valleys. This upland tract, which includes Tibet, Kashgaria, and the Gobi Desert, presents the form of a vast trapeze gradually narrowing towards the west. Near its south-west angle there rises a lofty mountain nucleus formed by the junction of the Himalayas and Karakorûm, and marking the centre of gravity of the whole continent. From this central mass, which is otherwise less elevated than many other Asiatic mountain systems, there radiate three vast plains and as many tablelands, disposed like the spokes of a wheel. The lowlands are the plain of Tatary in the north-west, the Tarim basin in the east, and in the south and south-east the depression furrowed by the Indus and Ganges; the highlands are the Pamir, Tibet, and Iran. The last named doubtless begins with the Hindu-Kush, a mountain range separating the Indus and Oxus valleys; but this mass is of very small extent, and the uplands attached to it, while less extensive and less elevated, are more geometrical in their outlines than those of Tibet. The Iranian tableland, comprising most of Afghanistan, Baluchistan, and Persia, forms a trapeze whose northern and southern sides are almost perfectly parallel.

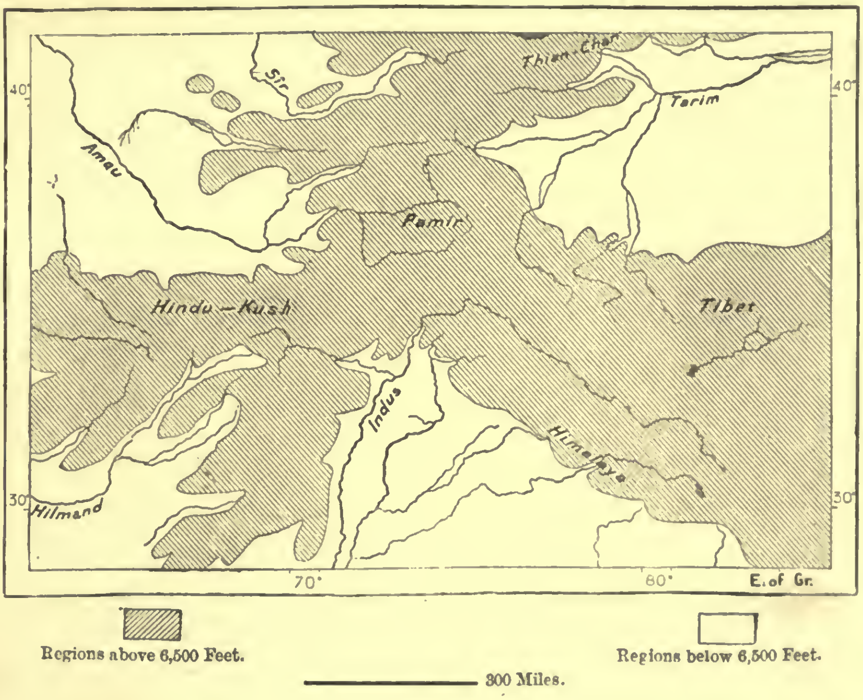
In the north-west this plateau is continued through Kurdistan, Armenia, and Asia Minor, by other lofty uplands overlooking the waters of the Euxine and Mediterranean. Thus nearly the whole of the continent is intersected by an elevated mass, forming in the west a single, in the east a double line, separating the northern and southern slopes, and leaving between them a few gateways only, through which passed the great historical routes of migration. In the centre of East Asia the Kuen-lun forms a continuation of the Hindu-Kush and more westerly systems. Though its crests fall short of the extreme height attained by those of the Himalayas, this range is on the whole the most elevated on the globe, and probably stretches eastwards across 42° of the meridian, or for a distance of 2,300 miles. It thus forms the eastern half of the continental axis, and is much

more regular in outline than the western, running in the direction of Europe. The term "Diaphragm," restricted by the Greeks to the mountains on the north Iranian frontier, might equally well be extended to the whole parting line from the Eastern Kuen-lun to the Anatolian Taurus. This would thus correspond with the European diaphragm formed by the Pyrenees, Cevennes, Alps, and Balkans, and roughly continuing the line of the Asiatic "Great Divide." But in the European section, with its rare tablelands and convenient passes, how much more numerous are the gaps and breaks of continuity, facilitating the movements of migration from slope to slope!

The ranges skirting or towering above the Asiatic tablelands are mostly of striking regularity in their line of direction, and several consist of distinct ridges,

Fig. 1.—Plateaux and Plains of Central Asia.

Scale 1 : 21,000,000.



all running parallel to each other. The Himalayas, culminating with Mount Everest, or Gaurisankar, "the Radiant," the highest point on the globe, develop along the northern frontier of India a perfect arc, whose focus might be in the very heart of Central Asia. The whole system, including both the Teraï Hills of Hindustan, and the Dapsang, Karakorûm, and other ranges of South Tibet, also runs in parallel curves north and south of the main range. In the same way the Kuen-lun comprises a great many ridges, all developing uniformly parallel lines.

This well-marked parallelism recurs in most of the systems of Siberia, China, Cis and Transgangetic India, Irania, and Western Asia. Speaking generally, the main continental ranges may be said to run chiefly in two directions—east-south-east to west-north-west (Altaï, Tarbagataï, Western Himalayas, Iranian

Mountains, and Caucasus), and east to west, or rather east-north-east to west-south-west (Tian-shan, most of the Siberian chains, and those converging on the Pamir tableland). In many places the ranges forming curves with their convex sides facing southwards, by their intersections, give rise to entanglements and overlappings which disturb the general uniformity of the mountain systems. Thus the ridges forming a continuation of the Himalayas and Dapsang intersect, east of the Pamir, the regular chains running parallel to the Tian-shan and Altaï. To these crossings are probably due the elevated masses of Kizil-yart and Tagharma, rising above the eastern edge of the Pamir, and from remote times

Fig. 2.—Parallelism of the Main Asiatic Ranges.

According to Richthofen for the Central Asiatic Ranges. Scale 1 : 120,000 000.

known to the Chinese as the Tsung-ling, or "Onion Mountains," from the wild garlic covering all their slopes. Out of these groups has been created the imaginary Bolor range, to which Humboldt had assigned a paramount importance in the orographic structure of Asia.

Asia, like Europe, runs mainly east and west, a geographical fact which has had enormous influence on the development of mankind. While Europe and Asia occupy over half of the earth's circumference east and west, but a fourth part only taken north and south, the New World, confined between the Pacific and Atlantic Oceans, stretches precisely in the inverse direction, across more than a third of the periphery from the Arctic nearly to the Antarctic Circle. The

contrast is complete in the general disposition of the two continental groups, so that flora, fauna, and races all present analogous contrasts. In Asia the species are easily diffused from one extremity of the continent to the other by following the parallels of latitude, and taking advantage of the breaks of continuity, wherever the upland plateaux present an obstacle to their progress. From the plains of the Oxus to the Atlantic seaboard races have been variously displaced without meeting with climates greatly differing from their own. Hence the mutual influences

Fig. 3.—Mount Everest.

and the elements of a common civilisation spread over vast spaces. The same cause secured the inevitable intermingling of all the European and Asiatic races, generally producing, in these two divisions of the Old World, a certain unity contrasting forcibly with the diversity characteristic of the western hemisphere. Here the migrations from north to south, or from south to north, were necessarily confined to much narrower limits, the ordinary obstacles presented by plateaux and highlands being intensified by those flowing from differences of latitude. Special

civilisations were thus developed in favoured regions, which had no more than a distant influence on each other, and the peoples remained almost everywhere without coherence or any common bonds of union. For how could the Eskimo share in a common culture with the Prairie Indians, or these with the Mexicans, Mayas, Muiscas, Quichuas, Aymaras, Guaranis, Patagonians? It was even through the interference of Europe that the American aborigines were destined to receive the first impulse which caused them to become members of the common human family. Thanks to the position of the two continents stretching across the northern and southern hemispheres, Europeans of different climates—Portuguese, Spaniards, Italians, French, English, Scotch, Scandinavians—have been able to settle north and south of the equator in regions whose climates resembled their own, thus founding in the two zones a new England, a new Spain, and for a time a new France.

Geological Formations—Igneous Forces.

Still but partially explored as a whole, Asia remains even now to a large extent an imperfectly known region. The western section, Siberia, with some of the highlands separating it from the central plateau, India, and various tracts of Further India and China are the parts whose formations, disposed in the same order as in Europe, have already been studied and classed by the geologist. Crystalline rocks, old schists, palæozoic strata, are the chief constituents of the Siberian highlands. The Kuen-lun and the Karakorûm seem also to belong to the primitive structure of the continent, whereas the Himalayas, while resting on crystalline masses, have been more recently upheaved during the secondary and tertiary periods. An idea of the tremendous disturbances that have here taken place may be had from the fact that the eocene strata near Leh have been raised to a height of 11,650 feet.

The tracts covered with molten lava occupy a great part of the periphery of the continent. Volcanic eminences occur in Siam and Pegu; half of the Ganges peninsula is strewn with igneous rocks; hot springs and mud volcanoes bubble up on the crests of argillaceous cones on the Mekran coast, and near the Helmand; extinct craters are met in South-west Arabia and the Strait of Bab-el-Mandeb, as well as in Abyssinia, on the opposite coast; the Hejaz also, and the Sinai peninsula, have their ancient lava streams; in Asia Minor we meet with the burnt plains of Cappadocia, "Phlegræan Fields" like those of Italy, the Hassan Dagh, Argæus, and other mountains of igneous origin; in Armenia, Mounts Ararat, Alagöz, and Abul are of the same character; and Elbûrz, giant of the Caucasus, is also an old volcano, while the two extremities of this range are marked by boiling mud and naphtha wells. Lastly, Demavend, rising majestically above the southern shores of the Caspian, is a burning mountain, whose crater is not yet quite extinct.

The northern ranges, which under various names separate Russian Turkestan and Siberia from the Chinese Empire, must be regarded as forming a section of

the vast, though frequently interrupted, ridge stretching from the southern extremity of Africa to that of the New World, and forming an immense crescent round the Indian and Pacific Oceans. But within this is another crescent, the "fiery circle" already traced by Leopold von Buch. Starting from the volcanoes of New Zealand, it runs through the Philippines and along the Asiatic seaboard northwards, through Japan and the Kuriles, to the Aleutian archipelago and Alaska, whence it is continued in a south-easterly direction to the neighbourhood of Magellan Strait. In the Asiatic section of this crescent the active or barely quiescent volcanoes are reckoned by the hundred, though the only fiery cones still active on the mainland are those of Kamchatka, which connect the Kuriles with the Aleutian group.

In some regions of the interior there also occur masses of scoria and lava streams, but the craters whence they flowed have been extinct either since the second half of the tertiary period, or at least for some centuries. The doubts formerly thrown on the reality of the active volcanoes mentioned in the Chinese records, and often referred to by Humboldt, have not yet been finally disposed of. The observations made by Stoliezka, who fancied he had traversed a volcanic district with basalt rocks in the distance, have been called in question. But west of Irkutsk the valley of a tributary of the Oka is filled by a vast lava stream, above which rise two craters. Other craters occur in the valley of the Irkut, and other lava streams farther east, in the basin of the Jida, near Selenghinsk, and on the Vitim plateau, near the north-east angle of Lake Baikal. Lavas and basalts have also flown from the neighbouring Okhotzk Mountains, while vestiges of recent eruptions occur in most of the terraced mountains of Siberia flanking the north-west side of the Mongolian plateaux.

The suspension of the lava streams arises from the almost total disappearance of the saline lakes formerly filling the great depressions of Central Asia. Nevertheless there is a volcanic tract in the east of the continent south of Aïgun, and 540 miles from the coast, where eruptions certainly took place in 1721 and 1722. The detailed reports of the Chinese savants brought to light by Vasilyev leave no doubt as to this fact, which should perhaps be explained by the number of lakes and swamps still found on the plateau.

The oscillations which have given its present form to the continent are still going on with sufficient rapidity to enable observers to detect them along a great extent of the seaboard. Thus there can be scarcely any doubt that the northern shores of Siberia are slowly rising above the Arctic Ocean, for islands in the middle of the last century standing at some distance from the coast are now connected with it, not by sand-banks, but by the rocky bed of the sea. Similar phenomena have been observed in the Ægean and Black Seas, as well as along the east side of the Red Sea, as shown by the upheaved coral banks fringing the coast of Arabia. Traces of recent upheaval have likewise been noted on the shores of Baluchistan and Malabar, in Ceylon, British Burmah, East China, about the Amur delta, and in Kamchatka.

Symptoms of subsidence, so much more easily recognised than the upward

motion, have hitherto been detected only at a very few points along the Asiatic seaboard. A part of the coast of Syria, the Great Western Runn between the Indus delta and Katch, the shores of Fo-kien, Ton-kin, and Cochin China, are at present subsiding. But the movement is most perceptible in the Laccadives and Maldives, where the atolls, or circular coral reefs, are slowly disappearing, notwithstanding the efforts of the busy polyps to keep them above the surface. The Chagos Bank has already been entirely engulfed.

Climate—Diminution of Moisture.

The great elevation of the Asiatic plateaux, with an atmosphere twice as rarefied as that of the lowlands, modifies to a remarkable extent the normal climate of the continent. Already as a whole far more extensive than Europe,

Fig. 4.—The Han-haï: a dried-up Sea-bed.
According to Richthofen. Scale 1 : 32,000,000.

Sandy or Stony Desert. Upheaved Islands. Recent Lacustrine Depressions.

600 Miles.

and consequently less exposed to oceanic influences, it everywhere receives a proportionately less amount of moisture. But the central portions, being almost completely encircled by mountains which arrest the course of wet or snowy winds, receive far less humidity than the average rainfall of the rest of the continent. Still the maritime slopes of the plateaux and highlands do not retain all the moisture brought by the winds, so that torrents and even rivers furrow the slopes facing inland. Some of these streams ultimately find their way to the ocean, but most of them run dry either in the "cirques" where they rise, or at a lower elevation, or else in the deep and winding depression stretching south-west and north-east, between the Kuen-lun and the Tian-shan and Altaï mountain systems.

At a time when these waters were more abundant the whole of the lower part of the great Asiatic depression was filled by a vast sea nearly as long, east and west,

as the Mediterranean, but somewhat narrower. This dried-up sea, the Han-hai of the Chinese, seems to have stood about 5,000 feet above the actual sea-level, with a depth in some places of 3,000 feet. It occupied between Tibet and the Tian-shan range all the present Tarim basin, forming between the Tian-shan and Altaï a ramifying gulf, which Richthofen has called the "Zungarian Basin." Eastwards it joined the Chamo basin through a strait studded with islands, all running in the same direction as the Tian-shan. At present this depression is divided by slight elevations into secondary cavities, each with its dried-up river beds and marshes, or saline incrustations, last remnants of what was once the Asiatic Mediterranean.

In spite of the different elevations and latitudes, a singular uniformity is imparted to all these inland regions by the general sterility of the soil, the dryness of the atmosphere, and the sudden vicissitudes of temperature. The rolling steppes of red earth in the Altaï region; the argillaceous plateaux, heavy and grey like a sea of congealed mud; the less monotonous districts, varied here and there by a few protruding rocks; the deserts where crescent sandy dunes drive like mighty billows before the wind; lastly, the stony plains strewn with fragments of quartz, chalcedony, jasper, carnelians, amethysts, released from their less solid and vanished matrices, weathered to dust and dispersed by the winds—all these regions form a monotonous whole sublime in the very simplicity of their lines. On these vast tablelands, crossed from horizon to horizon by long furrows like the ground-swell produced by the trade winds, caravans wind their way for days and weeks through a changeless scene of dreary majesty. Even the descent from the plateaux towards the deep depressions produces little change. The upland steppe, 3 miles above sea-level, the bed of the dried-up Mediterranean, the naked lands of Tibet and the Northern Gobi, separated from each other by 18° of latitude, present everywhere the same uniform aspect, broken only by a few oases, whose fresh-water streams, with their fringe of rich herbage, contrast forcibly with the bare mountain crags and steppes of the surrounding plateaux. The species of indigenous plants are nowhere numerous, and even by the running waters few trees are met except the poplar and willow. The nomad shepherds, who drive their flocks from the lowlands to the uplands, 13,000 to 20,000 feet above sea-level, are little affected by the change. How different all this from the contrast presented in Europe by the luxuriant plains of Lombardy with the rugged Alpine heights!

Areas of Inland Drainage.

The expression "Central Asia" is by the Russians wrongly applied to the part of the continent bordering on Europe, and lying within the same Aralo-Caspian depression as the portion of Russia watered by the Volga and its tributaries. Richthofen more correctly restricts this term to the Han-haï depression, and the Tibetan tablelands whose waters evaporate without forming streams. This part of the continent is, in fact, distinguished from all the surrounding regions by the

circumstance that the detritus of the plateaux and highlands caused by weathering and erosion remains in the basin itself, whereas it is elsewhere regularly carried away to the sea. The general movement of Central Asia proper is centripetal, that of the periphery centrifugal. But on the Pamir, forming the water-parting between China and the Caspian, there also occur closed cirques, whose waters do not reach the lowlands. Afghanistan and the Persian tableland have also their isolated basins, their land-locked lakes and marshes; and Asia Minor itself presents saline lakes cut off from all communication with the sea, notwithstanding the greater relative abundance of the rainfall in this sea-girt region. The plains of Syria, Arabia, and even India, also comprise vast spaces whose waters have no outlet towards the sea. Lastly, the Aralo-Caspian depression is now a land-locked basin, or rather forms a group of distinct basins like that of the Chinese Mediterranean, with which they seem to have formerly communicated through the Straits of Zungaria. Before the present geological epoch the Caspian, Aral, Balkash, and countless other lakes of smaller size were successively isolated like those of the Han-haï. But the two depressions of Western and Central Asia present a complete contrast, the one in the generally horizontal direction of its plains, the other in the great relief of the surrounding highlands.

Taken collectively, all the Asiatic regions with no outlets seawards have an area of perhaps 4,000,000 square miles, equal to that of the whole of Europe. This arid tract is connected through the Arabian peninsula with the zone of waterless deserts occupying nearly the whole of Africa between the Mediterranean seaboard and Sudan. Thus all the eastern hemisphere is crossed obliquely by a belt of arid regions, which barely fringes the south-east corner of Europe, and is divided in nearly equal proportions between Asia and Africa. Historic evidence shows that for the last four thousand years a large portion of Central Asia has been dried up. At one time the region of Lake Lob was occupied by a vast inland sea, the Li-haï, or "Western Sea," forming a considerable section of the ancient Han-haï. But as the process of desiccation progressed this term had to be transferred from the Tarim basin to the Caspian. Skilfully planned works of irrigation may have here and there created a few small oases, but the loss of habitable land has been enormous. Whole kingdoms have disappeared, many cities have been swallowed up in the sands, and certain tracts, formerly accessible to travellers, can no longer be visited, owing to the total absence of water and vegetation. Inhabited districts south of the Lob-nor, traversed by Marco Polo, are now inaccessible. Even beyond the large Asiatic basins on the South Siberian and Mongolian plateaux the same phenomenon of gradual absorption is perceptible, especially in the west. East of Lake Baikal the ancient sheets of water filling the cavities and terraces have been replaced by countless lakelets, tarns, marshes, forming an ever-changing watery labyrinth. From the Baikal to the Amur, from the Argun to the Khingan Mountains, the land is studded with these lacustrine bodies, recalling a time when the country exhibited the same aspect as the present Finland.

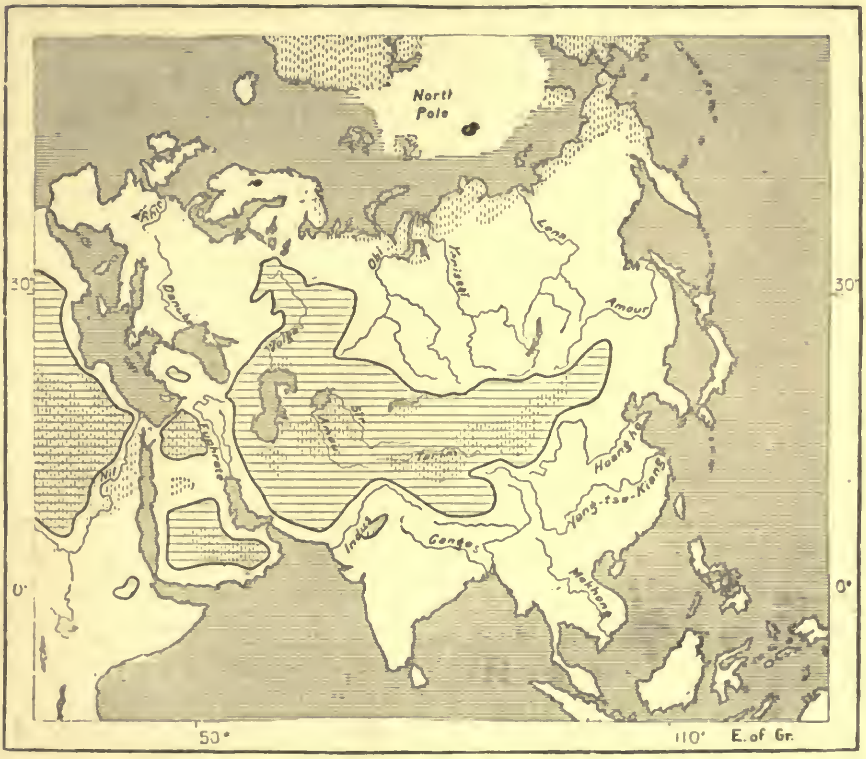
East of the western Chinese closed basin the erosive action of running waters

CLIFFS IN THE "YELLOW EARTH," NORTH OF TAI-YUEN, SHAN-SI.

has excavated vast cañons, revealing the geological structure of the old bed of the steppes. For a space far larger than the whole of France, North China is composed of a yellow clay, in some places 1,600 to 2,000 feet thick. In the province of Shen-si the atmosphere is nearly always charged with this dust, which gives a yellow hue to roads, houses, trees, fields, wayfarers. This "Yellow Land" (Hoang-tu) has given its name to the Yellow River (Hoang-ho), which bears its alluvium to the Yellow Sea (Hoang-haï). The clay is exactly like the loess of the Rhine and Danube valleys of alluvial or glacial origin. It

Fig. 5.—Arid Regions and Closed Basins of Asia.

Coatpont Projection. Scale 1 : 120,000,000.



Deserts. Tracts with no outlet seawards.

3,000 Miles.

is not perceptibly stratified like aqueous deposits, nor does it contain fluvial shells, but only the remains of land molluscs. Throughout its whole thickness it is pierced by vertical holes variously ramified, evidently caused by the roots of countless plants, above which the dust of the soil has been successively accumulated. Through this porous soil the water percolates rapidly, except where roads have been formed, destroying the fibrous texture of the clay. According to Richthofen, this yellow earth is nothing more than the soil of the steppes formerly deposited by the winds in the closed basins.

The erosion of these vast accumulations is effected by the infiltration of water. Wells are sunk, and underground galleries opened here and there, over which the clay vaults sink in. Thus are formed ravines with vertical walls ramifying in all directions. In many places the plateau seems perfectly horizontal; yet it is cut up into so many fragments connected by narrow isthmuses that the traveller, unaccompanied by a guide, would inevitably lose his way. The erosion is incessantly advancing in the west, where nothing remains in many river valleys except isolated vertical masses assuming the form of walls, turreted castles, or keeps. Many of these blocks have even been converted into strongholds pierced with invisible caverns, affording shelter to their occupants. By a remarkable contrast, this clay, formerly covering uninhabited wastes, now yields the heaviest crops in the irrigated districts. The yellow earth even serves as a manure for the neighbouring lands. The Tibetan plateaux would seem to be also composed of a similar clay, and there is reason to believe that geological phenomena are taking place corresponding exactly with those of the Upper Hoang-ho basin. In their aggregate all the geographical zones of Eastern Asia may be said to have shifted westwards. The ravines of the Yellow Land encroach on the plateaux, the sources of the Hoang-ho and its tributaries advance continually farther inland, the coast-line itself stretched formerly farther eastwards, and Japan and the Kuriles are probably the remains of the ancient Asiatic seaboard.

Rivers flowing Seawards.

On the northern slope of the continent the waters drain to the Arctic Ocean through the three mighty rivers Ob, Yenisei, and Lena, though they flow freely for a portion only of the year. In these northern latitudes the streams are ice-bound or blocked for eight or nine months, besides which their navigation is extremely tedious between frozen tundras destitute of towns, villages, or cultivated lands. The sea voyages from Europe to the mouths of the great Siberian rivers did not begin till about 1600 under the Czar Boris Godunov, but a few years thereafter a decree of the Russian Government closed all trade with the Siberian coast, which was not reopened till 1869 by the Norwegians Carlsen and Johannesen. The Lena, however, was ascended for the first time in 1878 by a vessel accompanying that of Nordenskjöld. But though the communication is now fully established between Europe and the Siberian estuaries, this result can have but little economic importance so long as these northern lands remain unpeopled. Cut off from the rest of the world by ice and the bleak wastes of the seaboard, the Siberian rivers, though flowing to the open sea, may be said to possess no more interest for man than if they drained to inland basins. Even the Amur, flowing under a more favourable climate eastwards to the Sea of Okhotzk, is ice-bound for six months in the year. Thus fully half of Asia, consisting either of inland depressions or of valleys without easy outlets, is deprived of the advantages derived by most other regions from their running waters.

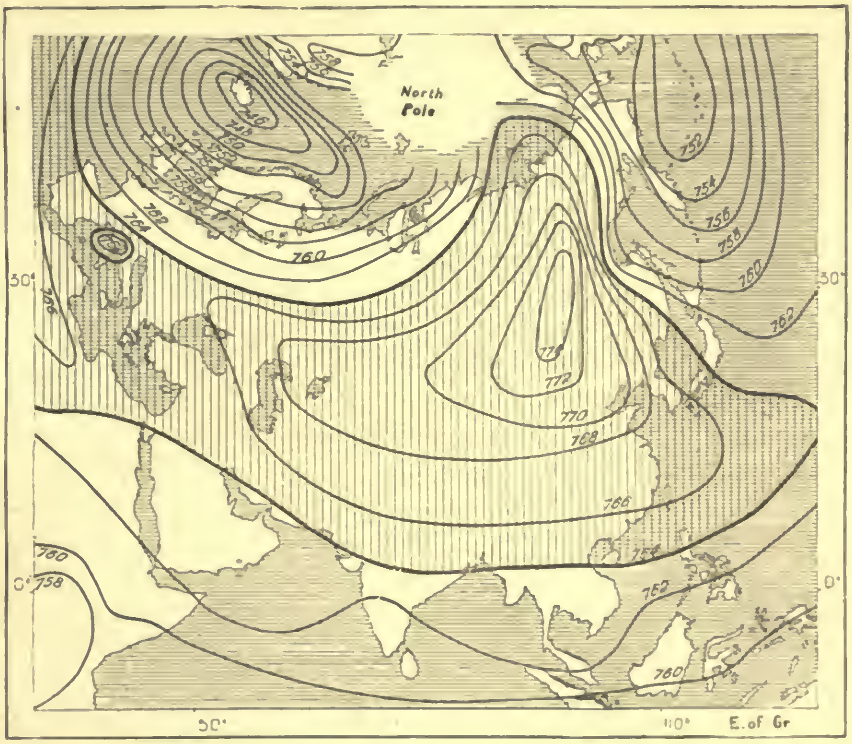
From the Pet-chi-li to the Persian Gulf most of the coast lands are abundantly

THE UPPER YANG-TSE-KIANG.

watered, and some of their rivers are not only amongst the largest on the globe, but are also amongst the most useful for trade and irrigation. Those flowing eastwards to the Pacific and southwards to the Indian Ocean are disposed in groups presenting striking analogies with each other. Thus the Hoang-ho and Yang-tze-kiang, rising in close proximity, flow first in opposite directions, and after describing vast curves, again approach each other so closely that their deltas have often been nearly united in the Shan-tung peninsula. The Me-khong, the chief river of Indo-China, and, according to Francis Garnier,

Fig. 6.—Isobars in January.

Scale 1 : 120,000,000



3,000 Miles.

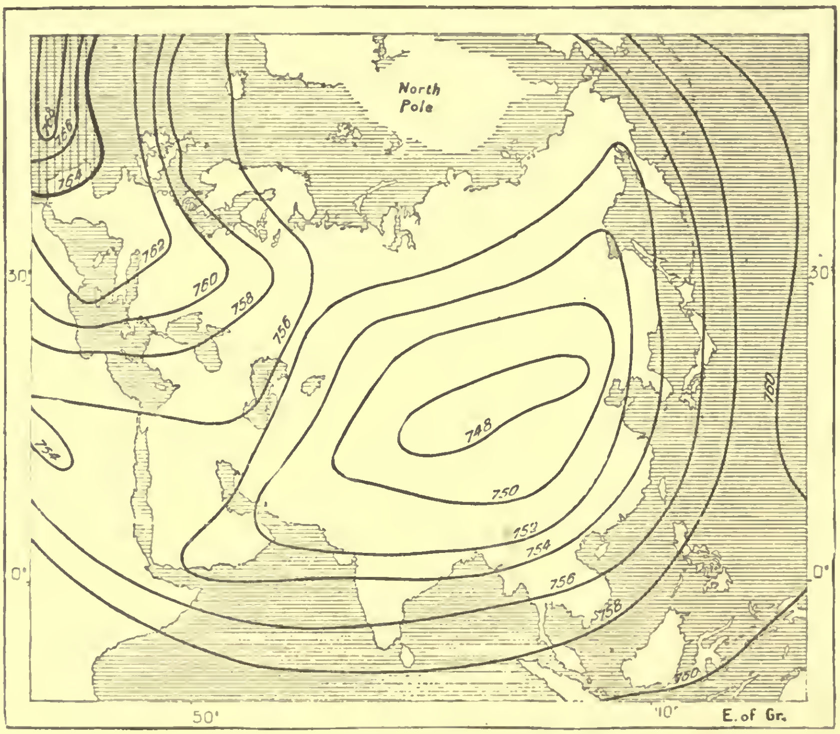
the largest in volume in Asia, rises in the same highlands, as do likewise the Salwen and Irawady. The Brahmaputra and Ganges also have their sources near each other, but on opposite slopes of the Himalayas, reuniting only in the common delta formed by their own alluvia. The Indus and Satlaj may likewise be regarded as twin streams, in their upper courses resembling the two last mentioned. Collectively these four rivers represent the four animals of the Hindu legend—elephant, stag, cow, and tiger—which descend to the plains of India from the crest of the sacred mountain. The two streams flowing to the Persian Gulf, the Tigris and the Euphrates, also form an analogous group famous in legend and history. Lastly,

the Sea of Aral, or inland basin of Turkestan, offers a like phenomenon in the Oxus and Sir-darya, flowing parallel to each other, and at one time apparently united in a common delta.

Temperature—Rainfall—Vegetation.

The work of geographical exploration being still unfinished, pluviometrical observations are also necessarily incomplete, the direction and force of the winds and the amount of humidity having been gauged only in the regions accessible to European science, so that tracts as large as all Europe are still almost unknown

Fig. 7.—Isobars in July.
Scale 1 : 120,000,000.



3,000 Miles.

lands for the meteorologist. Not even a proximate estimate can be formed of the rainfall in the various Asiatic countries, though we know that in the aggregate the climate of Asia contrasts sharply with that of Europe. The latter, almost everywhere sea-girt, receives moisture at all seasons, the mean difference between the driest and wettest months oscillating between 1 and 3, whereas the great bulk of the Asiatic mainland is exposed to atmospheric strata far more regular in their action. East of the transitional zone bordering on Europe, the course of the winds and rains is marked by extreme uniformity. On all the southern and eastern seaboards the driest month yields fifty to sixty times less moisture than the rainy season. In winter the cold atmospheric strata become

concentrated in Eastern Siberia in the basin of the Lena and its tributaries. The maximum point of cold oscillates about Verkhojansk, where the sky is always clear, the air bright. On some places snow falls so rarely that sleighs are unavailable for a great part of the winter. Then this cold air sets eastwards and southwards, bringing in its wake fine weather and dryness. In summer the reverse process takes place, as shown in Voyeïkov's tentative chart. Siberia, where the barometer in winter marked the greatest pressure, is then exposed to the least atmospheric weight. The sea air is here concentrated from the Pacific and Indian Oceans, filling up the vacuum and bearing with it clouds and rain. Along all the seaboard from the Arabian Sea to the Gulf of Okhotzk the wet monsoon prevails during this period of atmospheric reflux to Eastern Siberia.

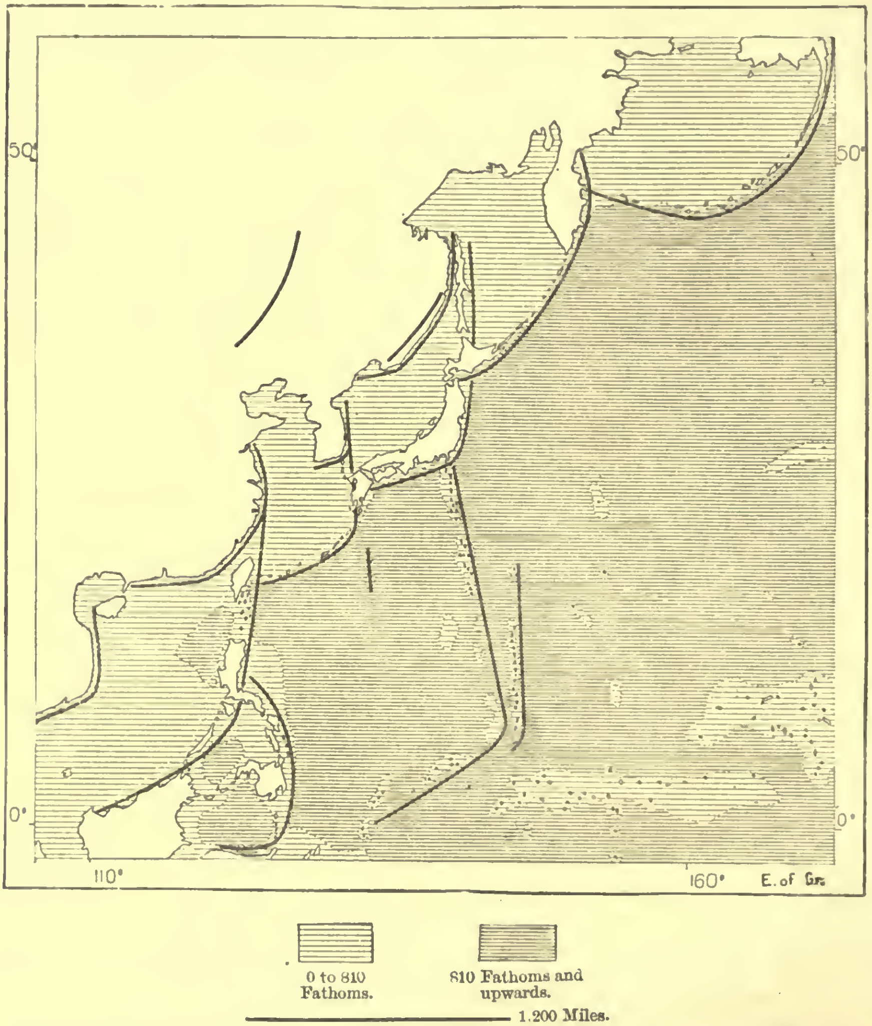
Cis and Transgangetic India, with the neighbouring archipelagos of Malaysia and the Philippines, probably receive more than half of the whole continental rainfall. In this region, exposed by the barrier of the Himalayas and its eastern extensions to the full play of the tropical currents, the sea air arrives charged with vapours, which are precipitated at the slightest contact with the upland slopes. In summer the southern portion of the continent, having a much higher temperature than the sea, attracts the aërial masses resting on the Indian Ocean, thus producing the southern monsoon. Saturated with the moisture arising from the sea as from a seething caldron, this monsoon discharges torrential downpours on the Malabar and Transgangetic coasts, after which it strikes against the advanced Himalayan spurs and other ranges flanking the southern border of the Chinese tablelands. The moist clouds, thus arrested by the lower chains, show that the marine breezes seldom rise higher than from 5,000 to 6,500 feet. But here the tropical rains, real deluges, exceed anything that the inhabitants of the temperate zone have any experience of. Annual rainfalls of 20, 30, and 40 feet are by no means rare in various parts of India, and in the Kassia Hills, overlooking the course of the Lower Brahmaputra, it amounts to 52 feet. Certain Indian valleys have received in one downpour as much water as many French valleys in a twelvemonth.

Peninsulas.

Thanks to their varied coast-line and reliefs, the regions of Southern Asia, Irania and Arabia alone excepted. present a greater diversity of aspects than the other parts of the continent. The two great peninsulas of India and Indo-China, with the neighbouring archipelagos, are probably unequalled in the richness of their vegetation, the splendour of flower and foliage, and the beauty of the animal species. These are the enchanted isles of the Arab legends, where the sands sparkle with rubies and sapphires, where the trees shed strength and health-giving perfumes, where the birds with their diamond plumage speak with a wisdom unknown to the inhabitants. Many of these islands, gems set in a blue sea, lie nevertheless within the zones of typhoons, earthquakes, and fierce volcanic action. But the vapour-charged sea breezes soon repair the disasters of these agencies, quickly reviving the magnificence of their tropical vegetation.

Comparing continents with continents, the Swede Torbern Bergmann remarked in the last century that the large peninsulas, such as Arabia, Hindostan, and Indo-China, nearly all face southwards. These correspond exactly with the Hellenic, Italic, and Iberian peninsulas in Europe, and to a less degree with those of Lower California and Florida in the New World, where the intermediate peninsula has been transformed to an isthmus by the upheaval of the land in Central America.

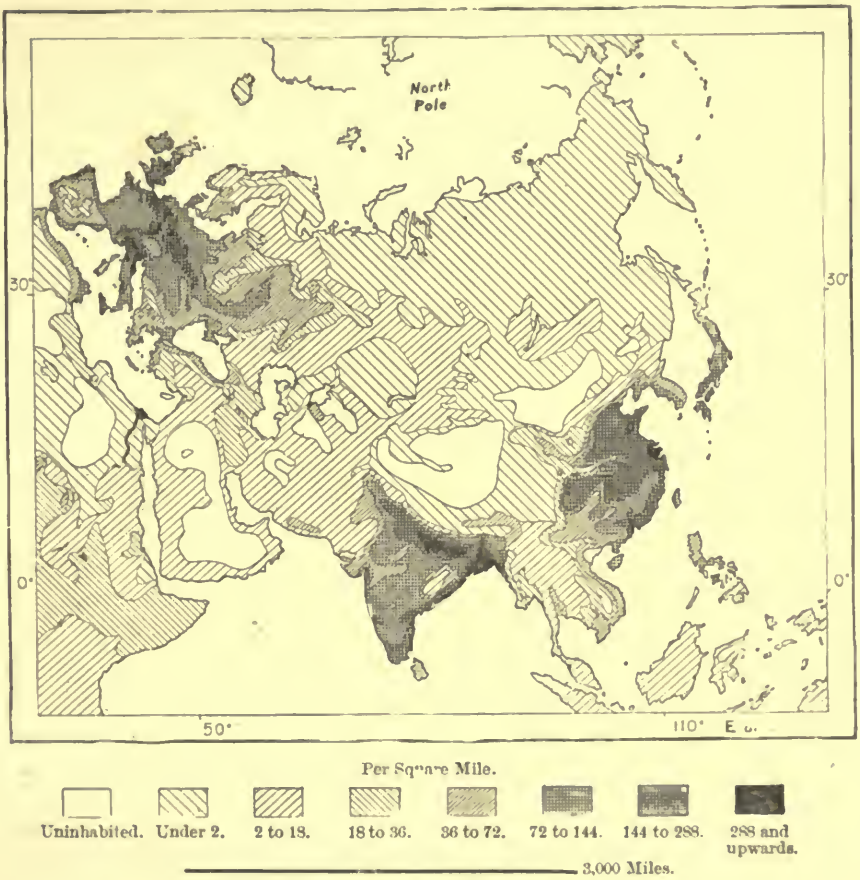
Fig. 8.—Curves of the Eastern Asiatic Seaboard and Islands.
Scale 1 : 60.000.000.



The peninsulas of the two continents of the eastern hemisphere, taken in their geographical order, are also distinguished by special and analogous features. Thus Arabia, nearly quadrangular in form, is another Spain in the solidity of its contour and the monotony of its coast-line. India, like Italy, presents more varied outlines, and has a large island at its southern extremity. Lastly, Indo-China and Greece are both alike washed by seas studded with countless islands and islets. These European and Asiatic archipelagos, like the corresponding Antilles in America,

have all their igneous phenomena, their craters of molten lava—more numerous, however, in Asia than elsewhere. Important geological changes are now taking place in this partially upheaved region, which may in its aggregate be regarded as a sort of isthmus between Asia and Australia. Nevertheless Wallace has noted a sharp line of separation between these two worlds, easily recognised by the difference in the vegetable and animal species peopling the lands situated on either side of this line. In the volcanic chain of the Southern Sundas, Bali belongs to

Fig. 9.—Density of the Asiatic Populations.
According to Behm and Hanemann.—Coatpont Projection.
Scale 1 : 120,000,000



the Asiatic, while Lombok, only 24 miles distant, already forms part of the Australian group.

Like the southern, the eastern Asiatic seaboard has also its three peninsulas stretching southwards—Kamchatka, Corea, and Sakhalin—the last apparently an island, but really a peninsula, being connected with the Siberian coast by a bank inaccessible to large vessels. Though possibly mere coincidences, these facts are more probably the result of a law regulating the distribution of dry land, the existence of which can scarcely be questioned, if its explanation must still remain an unsolved problem.

No less remarkable geographical analogies occur in the south-eastern archipelago. Thus Sumatra is obviously a peninsula of Malacca, connected with the mainland by the partly submerged isthmus of the Nicobar and Andaman groups. Several of the Malay Islands, Sumatra itself included, are disposed in regular order on openings in the crust of the earth, through which they communicate with an underground lava sea. But the distinctive feature presented by all these insular groups consists in their coast-lines forming a succession of segments of circles. From the north-west extremity of Sumatra to Flores the shores facing the Indian Ocean are developed in the form of a regular arc, and the same is true of Borneo, Palavan, Luzon, and Formosa. The east coast of Corea begins a third curve, which is continued towards the Liu-khieu Islands, while Japan and Sakhalin form a fourth, which in the island of Yesso intersects a fifth, sweeping through the Kuriles along the east side of Kamchatka. Lastly, the chain of the Aleutians, resting on a Kamchatka headland, stretches like a barrier across Bering Strait to Alaska. The radii of these insular curves vary in mean length from 1,100 to 1,200 miles, and the continental seaboard facing them is also disposed in large circular lines. The coasts of Siberia beyond the Amur, the Chinese seaboard between the Yellow Sea and Gulf of Ton-kin, that of Cochin China as far as the Me-khong delta, are all traced as if by the compass. Were the level of the Pacific to be raised from 1,600 to 2,000 feet, the Sikhota-Alin coast range, Russian Manchuria, would be changed to an archipelago like that of Japan, and the lower valley of the Amur and Sungari would be transformed to a sea, in its outlines resembling that of the Kuriles. In the west the Khingan range also develops a curve parallel to the sweep of the Kuriles, though composed of older rocks.

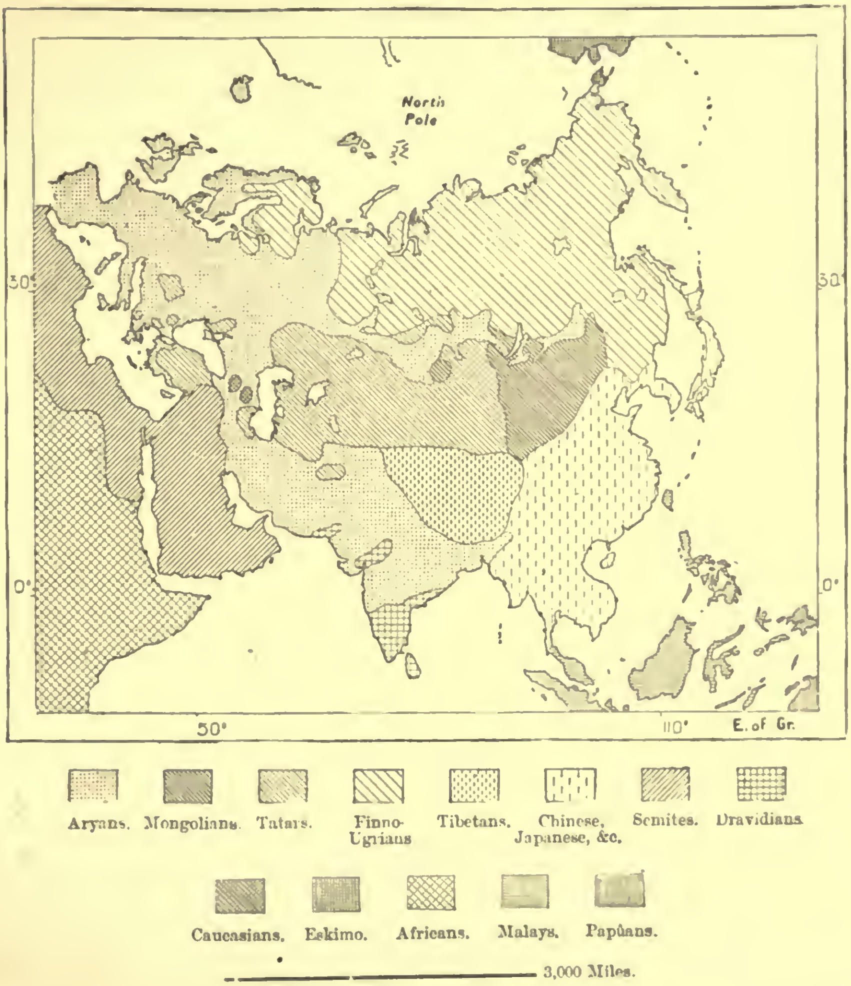
Inhabitants—Culture.

About two-thirds of the whole population of the globe are probably concentrated in Asia; but these multitudes are far from being evenly distributed over its surface. They are disposed according to the conditions of soil and climate, and, speaking generally, their density may be said to be in proportion to the abundance of the rainfall. Over one-tenth of the land, consisting of sands, rocks, or frozen tablelands, is absolutely uninhabited, and some of these tracts are never even traversed by caravans. In four-fifths of the surface the number of inhabitants scarcely reaches 40 per square mile. But in the remaining fifth, comprising India, parts of Indo-China, the Yang-tze-kiang and Hoang-ho basins, Japan, Luzon, and China, the population is dense enough to give Asia a decided numerical preponderance over the other continents. More than half of mankind are grouped in Southern and Eastern Asia within a space less than one-sixth of the dry land. Thus one of the extremities of Asia presents in this respect a phenomenon analogous to what is witnessed in Western Europe at the other extremity of the Old World.

Isolated from each other by plateaux, lofty ranges, or waterless wastes, the Asiatic populations have naturally remained far more distinct than those of Europe. Whatever be the origins, rivalries, or antagonisms of the European

nations, they have none the less the full consciousness of belonging to the same human family, and in many places the interminglings of Iberians and Celts, of Slavs and Finns, of Turks and Albanians, have effaced all primitive differences. But crossings are far from having produced a similar racial uniformity in Asia. Doubtless in the north an ethnical fusion has taken place between many Tûrki and Mongolian tribes, in the west between Semites and Iranians. Nor are there any

Fig. 10.—Distribution of the Asiatic Races.
Scale 1 : 120,000,000.



longer to be found completely homogeneous races, except, perhaps, in the Andaman Islands and Yesso. Yet what striking contrasts are still to be seen in the greater part of the continent! The various so-called "Turanian" or Finno-Tataric races mostly form distinct groups, completely separated from the other races in their mental qualities and social habits. In the north the Samoyedes, Ostyaks, and other Siberian tribes form one of the most easily recognised subdivisions. In the east Manchus and Tunguses, in the west Kirghiz and Tatars, represent the

Tûrki stock. The Mongolians and Buriats of the centre are regarded as the typical branch of the Mongol, or Yellow family. On the southern plateaux the Tibetans also form a distinct group, while the basins of the eastern rivers are occupied by the more or less mixed Chinese nation, surpassing all others in numbers, and distinguished from them by well-marked moral and mental features. In the south-east the Malays constitute another division of mankind, which in some of the Sunda Islands and Malacca exhibits characteristics contrasting with those of all the Asiatic peoples. The Arabs also, who with the Jews form the Semitic family, have maintained the primitive purity of their type in the interior of the south-western peninsula. Lastly, the races of India have, so to say, followed each other in successive layers. Although living in the same land, the various ethnical groups, divided into hostile castes, have been developed side by side, while keeping aloof from all physical or social intermixture. The sacred poems of the Hindus relate how the noble races had to struggle with the low-caste tribes, people of black complexion and flat nose, and even with the *Anasikas*, demons and monkeys. The struggle has ceased, but the law of caste has raised a brazen barrier between these primeval conflicting elements.

Speaking generally, the thickly peopled southern and eastern regions may be said to be occupied by cultured races, while the more desert northern tracts were till recently the exclusive domain of savage tribes, the intervening plains and plateaux being held by nomad peoples at the transitional or barbarous stage of civilisation. Yet through a strange, though by no means solitary delusion, the lofty Central Asiatic highlands have often been described in legends as the cradle of mankind, and the influence of these childlike traditions has been felt in many grave scientific works. It seemed natural that these cloud-capped peaks—abode of the gods and immortals—should also be the first home of man created by them, and that the migrations of the tribes should follow the course of the streams, descending to the lowlands from the pure sources springing amidst eternal snows. The Hindus, gazing northwards on the glittering crests of Mount Meru, fancied that here the first rays of light had beamed on their forefathers. The Armenian Ararat, with its snowy cone sweeping a boundless horizon of hills and plains, was also for many peoples the eminence on which the universal father of mortals had first set his foot. Lastly, the Pamir, well named the "Roof of the World," forming the great divide between east and west, was held sacred as the birthplace of the Aryan tribes, who spread thence over Western Asia and Europe. Thus have these uninhabited upland wastes come to be regarded as the cradle of the countless multitudes which, since the appearance of the Aryan race, have dwelt west of the Pamir.

But these delusions are henceforth dispelled, and the peoples of the earth have ceased to discover in the regions of perpetual snow the first trace of their ancestors. The geography of traditions and legends is doubtless of great importance, often furnishing valuable hints to the historian; but, if taken as an exclusive guide, it could lead to nothing but error. The civilisation of modern Europe cannot have had its rise in the arid upland plateaux and desert valleys of Central Asia. Apart

from what has been developed on the spot, most of its elements must be traced to the Nile basin, to the Asiatic coast lands, Asia Minor, Syria, Babylonia, Arabia, Persia, India, and China.

All the languages of Europe, except Basque, are of Asiatic origin, and all, whether introduced by the Aryans, Finns, or Tatars, bear witness in their vocabularies to the multiplicity of objects derived from the Eastern civilisations. In prehistoric times especially Asiatic influences must have been most felt by the still barbarous tribes of Europe. Previous to the national and spontaneous development of independent Hellenic culture, the first impulses had come from Asia, where the more advanced peoples had already worked out complete systems of culture. Here were invented the arts of copper casting, of blending the metals into useful alloys, of smelting iron, working in gold and silver. Languages, religions, customs, implements, domestic animals, all came from the East. But after Europe had achieved its first triumph over Asia by the overthrow of Troy, Hellenic culture made rapid progress in the western peninsulas of Asia Minor as well as in Greece itself. Europe began, so to say, east of the Ægean Sea, where the Ionian cities received and transmitted to posterity the inheritance of knowledge bequeathed to them by the Chaldeans, Assyrians, Medes, and Persians. The very name of Asia seems to be of Hellenic origin, restricted at first to a small portion of the Ionian seaboard, and afterwards spread to the Anatolian peninsula and the whole continent. By an analogous phenomenon the name of a small tribe dwelling on the south coast of the Mediterranean was first extended to a Libyan province, and then to all Africa.

Religions.

But even long after the great centres of civilisation had been shifted from the Mesopotamian regions westwards to Athens and Rome, the religion destined gradually to spread over the West took its rise in an obscure hamlet by the shores of Lake Tiberias. The Arab writers had already observed in mediæval times that all the great religions, except Buddhism, had their origin in Western Asia, which has given birth to Judaism, the Zoroastrian, Christian, and Mohammedan worships, which, like rhythmical waves of thought, here succeeded each other at regular intervals of about six hundred years. All these systems have otherwise a strong family likeness; all have been alike influenced by outward surroundings, which in their essential features present striking analogies from the shores of the Caspian to those of the Red Sea. Notwithstanding minor differences, the wildernesses of Arabia, Palestine, Chaldæa, and Persia have the same aspect of monotonous grandeur.

Buddhism also attempted to penetrate westwards, and traces of its passage are still preserved in the upland valley of Bamian, the main highway of intercourse in former times between India and Western Asia. On this historic spot, 8,600 feet above the sea, in the Hindu-Kush, a Buddhist king ruling over the Upper Oxus basin caused two colossal statues to be hewn in the solid rock, pierced with niches giving access to pilgrims. Other religious monuments mark the track of Buddhism

towards the north and north-west. But it failed to secure a permanent footing anywhere west of the Pamir and Tian-shan. But Mongols, Chinese, and Tibetans received the Indian missionaries, and, though misunderstanding their doctrine, they at least accepted its name, repeated its formulæ, and practised its rites. At present Buddhism, mingled with divers superstitions, prevails in China, Tibet, Japan, Mongolia, amongst numerous tribes about Lake Baikal, and even in Europe on the shores of the Caspian. In point of numbers it takes the foremost rank amongst the religions of the earth, while geographically Christianity has become the most

Fig. 11.—Chief Religions of Central Asia.
Scale 1 : 66.000.000

widely diffused. In Asia the influence of the latter is limited to the Armenians, Georgians, Nestorians, Maronites, Greeks of Asia Minor, the evangelized tribes of Asiatic Russia, a few Chinese, Japanese, and Indians, besides European immigrants and Eurasians. But elsewhere it has become the creed of all the civilised nations of Europe, America, South Africa, and Australasia. Mohammedanism also has spread over a vast domain, stretching mainly south and east of the Christian area. Arabia, its original home, Palestine, nearly all Western Asia as far as the Hindu-Kush, belong to the various Moslem sects. In India the followers of the Prophet are more numerous and influential than elsewhere, while their domain has

also been extended to China and Malaysia. North Africa has also been converted by the Arabs, and Islam is rapidly developing in Sudan, and even approaching the Guinea coast. In Europe it is practised only by the Osmanli, Arnauts, Pomaks, and Bosnians of the Balkan peninsula, and by the Tatars and other non-Aryan races of Russia. In the south it has been extirpated by fire and sword, though not before it had exercised a considerable influence on European civilisation. The Spanish Moors were for some time the teachers of the Western nations, nor were the arts and sciences unaffected by the warfare carried on for two centuries by the Crusaders against the Saracens and Turks for the possession of the Holy Land.

Historic Retrospect—Migrations.

Seen from an elevated standpoint, the great drama of universal history resolves itself into endless struggles, with varying issues, between Europe and Asia. After the initial Asiatic movement a European reaction began in the legendary times which are recalled by the myths of the Argonautic expedition. But the European period begins probably with the first great defeat of Asia, when the free citizens of Athens triumphed over the hosts of Darius and Xerxes. Henceforth the spirit of Western civilisation stood out in bold contrast with that of the East. Greece and the heirs of her greatness understood that the true object of life is to uphold and expand freedom, even at the cost of life itself. But after the glorious struggle ending with the memorable victories of Marathon and Salamis, Europe failed to maintain her rising superiority. Alexander no doubt in a few years overran Asia to the Indus; but his Macedonian followers ended by becoming Asiatics themselves, leaving successors who sought to continue the work of Darius and Xerxes by attaching Greece to Asia. Even Rome accepted her religion from Palestine, and the seat of empire was shifted to the Bosporus. And while the cultured peoples of the South, the Aryans and Semites, were thus exercising a moral influence on the West, the barbarous tribes of Eastern Europe and of Asia contributed by wholesale migrations to modify the races, if not of the West, at least those of the Sarmatian plains. After the fall of the Roman Empire the eastern continent again acquired an ascendancy, which lasted for a period of a thousand years. In the north the Alans, Avars, Huns, Pecheneghs, Kumans, Magyars, and other Finns, followed later on by Tatars and Mongolians, penetrated across the steppe lands westwards, and one of those nations founded a state within the circuit of the Carpathians which still flourishes. In the south the Arabs, following the southern shores of the Mediterranean, reached the very heart of Gaul, while between these two great movements the Turks seized the Balkan peninsula, and made the second Rome, the city of Constantine, the capital of their empire. For a time the European world threatened to be swallowed up in the advancing tide of Eastern supremacy.

One of the most astounding phenomena of history is the sudden rise in the thirteenth century of the Mongolian Empire, the largest that ever existed. The strictly nomadic population of the East can scarcely be estimated at more than four or five millions, and the fighting element can at no time have exceeded half a

million in these regions. The Mongolian hordes could never of themselves alone have made up those vast hosts spoken of in the mediæval chronicles. The alarm and terror of the vanquished multiplied in imagination the number of the conquerors, and in the popular fancy the East seemed to be an *officina gentium* peopled by vast multitudes, whereas the more favoured regions of the West were really far more populous. The Mongolian conquests were, in fact, achieved by small armies moving quickly from place to place with a unity of purpose, and falling suddenly on enemies too scattered or dismayed to offer an effectual resistance. The detachment sent by Jenghis Khan to Samarkand in pursuit of Sultan Ala-ed-dîn consisted of no more than 20,000 men, and for three years these warriors triumphantly overran Persia, Khorassan, Armenia, Georgia, the Caucasus, the Crimea, and the plains of the Volga before returning to their master.

The Mongols easily reached China by descending from their barren tablelands through the many valleys watered by the tributaries of the Hoang-ho. But towards the west there was but one route, which all could not reach. During the great displacements of populations vast numbers were crowded into Kashgaria, where they found themselves enclosed by lofty ranges inaccessible to armies. But the bulk of the migratory tribes followed the traditional route along the southern slopes of the Altaï, whence they swept over Western Siberia in two streams, one proceeding westwards to Europe, the other southwards to Persia and India. None of these hordes ever returned to their native pastures, except a few of the Astrakhan Kalmuks, who attempted in 1770 to escape from Russian rule to their ancestral homes at the foot of the Altaï. And now silence reigns in the restless regions which were once the centre of the Mongolian Empire, and the highway of the Altaï is a solitude. The turbulent populations formerly dwelling on the northern frontier of China have been pacified largely through the policy which, by the propagation of Lamaism in Mongolia, has changed a population of warriors into a community of monks.

But the traces of the old migrations have not been effaced. The flora and fauna of the two continents have become intermingled, while the peoples themselves overlap and encroach on each other at various points. Samoyedes and Lapps may still be regarded as Asiatics, and many even of the Mordvinians, Chuvashes, and Cheremissians in Central Russia are more akin in their habits to the remote Siberian Ostyaks than to the surrounding Russian populations. Many Bashkirs, Tatars, Kirghiz, and Kalmuks are also settled in Europe, while, on the other hand, European nations have penetrated far into Asia. Compact Slav communities are settled in Transcaucasia, and even on the Pacific seaboard, while the Hellenes are more numerous in Anatolia than the Osmanli in the Balkan peninsula.

European Influences.

Formerly the civilising, the Asiatics now represent the barbarous element in the presence of the Europeans, whose culture, with all its shortcomings, may still be regarded as the focus of education for the Eastern world. The general move-

ment of civilisation has thus been reversed, and intellectual life now radiates from Europe to the remotest corners of the earth. Wherever the European explorers first settled they doubtless began their civilising work by massacring, enslaving, or otherwise debasing the natives. But the beneficial influences of superior races have ever commenced by mutual hatred, mistrust, and antagonism. The conflicting elements everywhere contend for the mastery before they awaken to the conviction that all alike are members of the same human family.

Like the civilising action of Asia in former times, that of Europe spread eastwards first from the seaboard. The Portuguese led the way by establishing themselves on the shores of both India and Malaysia; and these were followed successively by the Spaniards, Dutch, English, and French, who founded factories or forts on the islands and coasts of the same regions. At present Cyprus is an English island, while Asia Minor is at least in theory under the protectorate of Great Britain, whose agents are also establishing her supremacy over Baluchistan, Afghanistan, and possibly even over Persia. Several points on the Arabian and Persian seaboards belong, directly or indirectly, to England, which guards the waters of the Persian Gulf, and reigns as undisputed mistress over India, Ceylon, and part of Indo-China. A large portion of Further India is under French rule, while Holland, England, and Spain, share with a few native sultans the possession of the Eastern Archipelago. Of all the Asiatic nations Japan has been most rapidly transformed under European influences, and in the Chinese seaports whole quarters are already occupied by European or American trading communities. Lastly, all the northern division of the continent owns the sway of Russia, whose Cossack pioneers have since the close of the sixteenth century brought the whole of Siberia under the sceptre of the Czar. Thus about one-half the area and one-third the population of Asia belong henceforth politically to Europe, as appears from the subjoined table of the direct and indirect Asiatic possessions of the various European states:—

	Area in Sq. Miles.	Population.
Asiatic Russia and Dependencies	6,736,000	17,000,000
British Possessions and Dependencies in Asia	2,772,000	218,500,000
Dutch	696,000	26,600,000
French	56,200	2,760,000
Spanish	118,200	7,450,000
Portuguese	7,200	770,000
Total Asia subject to Europe	10,385,600	313,080,000

From the settlements on the seaboard the political conquests and commercial relations of the West have advanced with ever-increasing rapidity towards the interior, although the work of scientific discovery is still far from complete. There are extensive regions of Central Asia scarcely visited except by solitary explorers, while even in the parts already surveyed many obscure problems remain still to be solved.

Progress of Discovery.

The ancients, whose navigators never ventured to sail beyond the Indian waters to China, carried on a tedious overland traffic with that country by caravan

routes, which remained unknown to the Western conquerors. It will be scarcely possible to discover the exact highway followed by the Greek traders; but Bactra being at that time the great emporium, the route indicated by Ptolemy most probably penetrated eastwards through the Upper Oxus valley across the southern portion of the Pamir, thence descending by one of the head-streams of the Œchardes (Tarim) to the present basin of Kashgaria. Attempts have even been made to identify the Tash-Kûrgan, which lies on a tributary of the Yarkand in Sarikol, with the "Stone Tower" spoken of by the old traders. At the beginning of the Christian era, when their military power was most flourishing, the Chinese subdued Western Tatary, and while their armies were crossing the Tian-shan passes, their merchants and pilgrims were traversing the rougher routes over the "Roof of the World." Hwen-T'sang, the most famous of these pilgrims, describes his journeys with sufficient minuteness to enable us to follow his footsteps across the Pamir and the Upper Oxus valley. Marco Polo also, after leaving Bactra (Balkh), followed a route differing little from that of his Greek predecessors, and running north-east across "the plain of the Pamier, which they say is the highest place in the world." Beyond Yarkand he skirted the Gobi district on the south, entering China proper about the sources of the Hoang-ho. This journey of Marco Polo across the continent from west to east still remains unrivalled after a lapse of six hundred years. As an imperial functionary he also visited most of the Chinese provinces and East Tibet, penetrating into Burmah through the still little-known regions separating Yun-nan from Indo-China. By his enthusiastic account of China, its great cities and eastern islands, he contributed more than any other traveller to stimulate the love of enterprise, and by him was conjured up the phantom pursued by Columbus across the western waters to the goal of a new world.

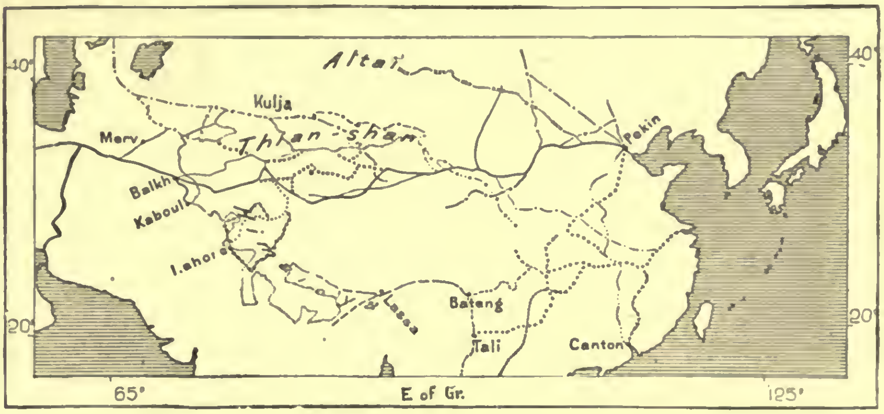
When Marco Polo was making his way over the Pamir, another more northern route to Mongolia had already been traversed by numerous merchants, missionaries, and envoys. In the middle of the thirteenth century the centre of gravity of the Mongol Empire lay about the neighbourhood of the Altaï. Hence the main commercial highway naturally converged on Karakorûm, capital of the state, and this was the road already followed by the Mongol and Tatar hordes north of the Tian-shan, and along the valley of the Sir-darya. It was also traversed by Plan de Carpin and Rubruk, envoy of Louis IX. Western adventurers now crowded round the imperial tent, and so numerous were the relations of the West with the great Eastern potentate that there was question of founding a chair of the Mongolian language in the Paris Sorbonne.

But the empire was soon broken up; Karakorûm ceased to be a capital, and its ruins were forgotten in the sands. Still the route to China along the northern slopes of the Tian-shan, and through Zungaria, remained open to trade. Pegolotti and others followed it in the fourteenth century, and it might have ultimately acquired real commercial importance, had the attention of the Western nations not been diverted to the great oceanic discoveries round the Cape of Good Hope to India, and across the Atlantic to the New World. The long and dangerous highways of Tatary, Zungaria, and Mongolia were now forsaken, and the work of

Marco Polo has been resumed only in our days. But it is being now prosecuted by many explorers armed with the resources of science, and protected by the respect with which the natives have learnt to regard the Western nations. From year to year the space still remaining to be explored becomes narrower; the main features of the mysterious Pamir are already determined; Northern and Western China have been traversed in every direction. But certain Tibetan districts still remain a *terra incognita,* pending the exploration of which many important geographical problems must remain unsolved. Asia may still be said to lack

Fig. 12.—Chief Itineraries of Central Asia.

Scale 1 : 120,000,000.



- Silk Route.
- Chinese in fifth century.
- Hwen-T'sang.
- Arabs.
- Nicolo and Maffeo Polo.
- Marco Polo.
- Main Trade Route according to Pegoletti, 1340.
- Forsyth, 1870.
- Prjevalski.
- Schlagintweit.
- Pundits.
- Gabet.
- Francis Garnier.
- McCarthy.
- Richthofen.
- Elias, 1872.
- Sosnovski.
- Cooper.
- Armand David

3,000 Miles.

geographical unity in its relations with the history of man; for the interior remains but partially known, while the movements of population and commerce continue still to be made by the seaward routes and coast regions.

The progress of trade and discovery must ultimately give to Asia the unity it now lacks, and the result must be a general shifting of equilibrium throughout the whole world. At no distant day the European railway system will be continued eastwards, connecting the cities of the Bosporus with those of India, and enabling goods to be forwarded without break from the Vistula to the Indus basin. Travellers will then flock to those still unknown regions of Eastern Tibet,

the scene of some of the grandest phenomena on the globe. The teeming populations of India and China will then also enter into direct relations with each other, and the trade routes of Calcutta and Shanghai will meet midway between those emporiums.

All these economic revolutions must revive many cities decayed, or even vanished, since the overland routes were abandoned for the safer and easier oceanic highways. Large cities cannot fail again to spring up in Bactriana and Sogdiana, where the main road between Central Europe and India will cross that leading to Mesopotamia, Syria, and Egypt. But besides the new centres of population that must arise in the West, others will be founded in Central Asia, the rallying-points of Chinese and Russians, of the Hindu and European traders. But the precise locality of these new marts must be determined by political as well as by climatic and other physical considerations, for Asia is a battle-field which is destined soon to witness a decisive struggle in the history of mankind.

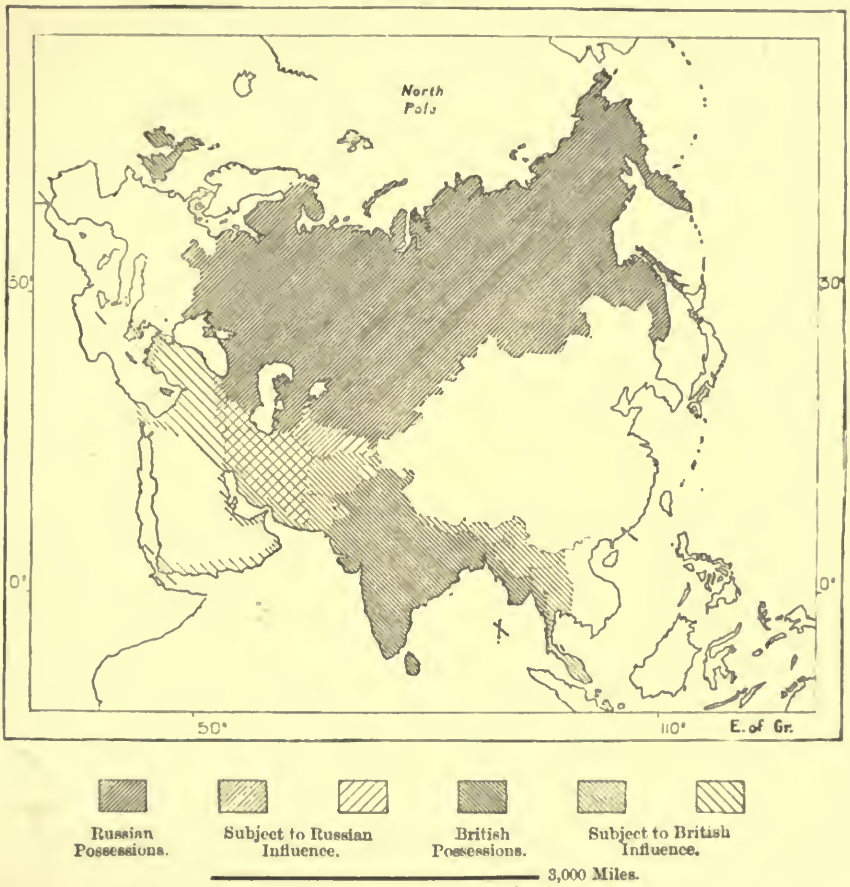
Political Rivalries.

The influence of Europe on the Asiatic populations is steadily increasing, so that the vast eastern continent would seem in some respects to be becoming more and more a simple dependency of its little western peninsula. The power of Europe is represented in Asia mainly by the two rival states, England and Russia, differing profoundly from each other in their traditions, political situation, and interests. Russia rules in the northern, England in the southern zone, and many small intermediate peoples struggling to maintain their independence gravitate necessarily to the orbits of these great states. In the extreme east, Japan, while preserving its political autonomy, is striving to rival the European peoples in the form of its administrative system. But the Chinese still cling to their individual nationality. Their power has been but little affected by the recent invasions and treaties with foreign states, and the empire is already beginning to resist further aggression by the inert force of its teeming populations. But these countless masses have also the strength imparted by industry, toil, and patience, while common sense, methodic habits, unflagging tenacity, render them formidable competitors in the race. Compared with the Hindus, the Chinese have the paramount advantage derived from a thorough mixture of races and national cohesion. Their temperate habits also enable them to become acclimatized under the most varied climes. They are an enduring race, which acquires fresh vitality from oppression and defeat. Hence England and Russia are not the only rivals for supremacy in Asia. Nay, more, the Chinese race cannot fail to clash with the peoples of Europe and North America on the fundamental questions of culture and social habits, before taking an active and intelligent part with them in the work of human progress. This conflict must needs retard the development of mankind until its course be again resumed by a final reconciliation of the ideas common to both elements.

The inevitable struggle between these three rival states is still retarded by

the vast extent of the partly desert lands separating them. If China is easily accessible by sea, she is at least completely enclosed landwards. Towards Russian Siberia she has far more solitudes than peopled regions, and here also Russia, having but few colonies, is incapable of exercising any political pressure on China. Between the "Flowery Land" and British India the zone of separation is formed not by solitudes, but by highlands still scarcely explored. In the west there is still a considerable tract intervening between Russian territory and India, and here the native element has hitherto maintained a certain political independence. In both

Fig. 13.—European Influence in Asia.
Scale 1 : 120,000,000.



directions the Turkomans and Afghans have till recently presented a bold front to the Russian and English invaders, who are endeavouring to seize the strategic points of their territory. Influential statesmen have even declared, whether sincerely or not, that this intermediate zone should be permanently respected by the two rival powers, and that the advanced sentinels of British India and Russian Turkestan run little risk of soon meeting on some pass of the Hindu-Kush, or about the sources of the Murghab.

From the military point of view China is still far inferior to the two other

great Asiatic powers. Although she has had the foresight to utilise the last twenty years of peace to reorganize her army, replenish her arsenals, cast guns, build ironclads, she is scarcely yet strong enough to contend with any European power beyond her own limits. She is also still largely enslaved to official etiquette and deep-rooted traditions, preventing her from freely entering on the new career towards which she is impelled by the course of events. Nevertheless both Government and people are at one in the determination to prevent foreigners from monopolizing the wealth and trade of the country. While receiving them in compliance with the terms of the treaties, the Chinese have contrived to protect their own interests, and while slowly accepting new ideas, they prefer to be their own teachers in applying them to economical purposes. From the material point of view they also possess the strength inherent in numbers. In Manchuria, in Formosa, and in the central regions they are gradually acquiring the land by cultivation, and even in many foreign countries they have attained a decided preponderance. From their over-peopled native land they are already overflowing into Further India, Malaysia, Australia, the Sandwich Islands, and the United States.

On the other hand, England is unable to contend by means of compact masses for the supremacy in Asia. In the very centre of her power she has nothing to depend upon beyond her European troops and native mercenaries. Still the territory already acquired gives her a tremendous defensive and aggressive power. She not only raises formidable armies in an empire containing one-sixth of the population of the globe, but also a sufficient revenue to be independent of the resources of the home country. The English cannot, of course, rely on the sympathy of their subjects, whom they probably despise too much to expect it of them. The time must also doubtless come, though it may be still remote, when the Hindus will develop a national life and get rid of their foreign masters. Meanwhile the English tenure is far more secure than before the mutiny of 1857, although the majority of the army is composed of sepoys, and all the lower functions of the administration are in the hands either of natives or of "Eurasians;" that is, half-caste Hindus and Europeans. The secret of England's strength lies in the fact that no national spirit has yet been evolved, no public opinion formed, except here and there, and even then deprived of all efficacy in a country which is divided into a multitude of distinct societies by the institution of caste. The English, belonging almost exclusively to the wealthy and influential classes, and unattended by servants of their own nationality, whose menial status might diminish British prestige, are enabled to live like gods and move in a higher world, far above their multitudinous subjects, by whom they are hated, yet feared.

Apart from the various questions of internal policy, the main point for England is not only to uphold her sway in Cisgangetic India, but also to connect by easy and rapid routes the two centres of her vast empire on which "the sun never sets." She requires the geographical unity of a powerful state, for there are still great gaps in her boundless domain. The London and Calcutta highway is not absolutely secured to her fleets and armies, and would be exposed

on the flank were Russia to seize the Dardanelles and upper basin of the Euphrates, or place Cossack garrisons in the strongholds of Afghanistan. Thanks to her fast-sailing fleets, England has hitherto enjoyed a great advantage over her rival for empire; for British armies are moved from the Thames to the Indus far more expeditiously than feeble Russian columns from the Caspian to the oasis of Merv. Hence, in spite of the maps, England is in reality much nearer to India than are the advanced Muscovite outposts on the Upper Oxus. The Mediterranean belongs to the fleets of England, which is thus enabled to close the Suez Canal at pleasure. She also rules supreme in the Red Sea, on the Arabian seaboard, in the Persian Gulf, and along the coasts of Persia and Baluchistan. But the water highways are insufficient, and she will also have to hold the overland routes beyond Europe. With this object she has already secured the virtual possession of Asia Minor and occupied Cyprus, at the extreme corner of the Mediterranean, over against the great bend of the Euphrates; she also holds strong positions in Makran and Baluchistan, and must either now or ultimately annex Kandahar permanently to British India. She is on friendly terms with the Western Asiatic sovereigns, by means of pensions gradually transforming them into vassals, thus avoiding the risk and expense of ruling them directly, for she also enjoys over Russia the great advantage derived from the possession of accumulated capital. Her military routes are being rapidly developed, and a line 600 miles long will soon connect the Indian railway system with Kandahar, the true key to Afghanistan. Half the distance separating Alexandretta from Calcutta will thus be traversed by English locomotives. But is it not evident from such efforts that the struggle for supremacy in Asia is approaching?

Slower in their movements, because opposed by still unsurmounted physical obstacles, the Russians have, as a military power, advantages of another description over their English rivals. Their territory is not composed of scattered fragments, but forms from the shores of Lapland to the Pamir a perfect geographical unity. A large portion of the inhabitants are, moreover, of Russian stock, and this ethnical element is yearly increasing by colonisation. Nor are the native tribes anywhere numerous enough to cause serious alarm to the Slav settlers, who have become diversely intermingled with them, and who do not maintain a haughty reserve towards the former owners of the land. Perfect fusion is prevented by differences of social habits, and amongst the Mohammedans by religious prejudice. Still the Orthodox Russians and the Moslems of Turkestan do not, like the English and Hindus, hold aloof from each other, as if they belonged to two distinct orders of humanity. Hence national cohesion may be ultimately realised in Asiatic as easily as it has been in European Russia. The Russians will also, like the English, soon doubtless succeed in giving greater material cohesion to their Asiatic Empire by means of military routes, lines of wells, and even railways across the intervening wastes. The railway system, now reaching no farther than the Caucasus, Atrek valley, and river Ural, will be continued to the foot of the Hindu-Kush, and then formidable armies may in a few weeks be massed on the frontiers of the lands hitherto swayed by British influence.

But these frontiers still present many weak points, especially on the Iranian tableland and in the upland valleys of the Tigris and Euphrates. Whether the two rivals wish it or not, whether they seek to precipitate or avoid the conflict, it must sooner or later inevitably come. All the petty intermediate states are already being disintegrated under the pressure of the twofold attraction, and on both sides the intrigues, rivalries, political, commercial, and religious jealousies have silently begun the mighty struggle which must one day burst into open warfare.

Thus are being prepared revolutions of a vital character in the heart of the Old World. The Asiatic lands, where, rightly or wrongly, the cultured races seek their primeval origins, are becoming the scene of a supreme political struggle between the two most powerful nations in Europe. Whatever be the issue, the hope may be entertained that Western Asia and the Indian world will definitely belong to the domain of Western civilisation, and that thenceforth all the European and Asiatic peoples will accomplish their evolution harmoniously together, so that all may benefit by the progress of each. Thanks to the reaction of Western culture on the Eastern world, mankind, conscious of its unity, has already been enlarged, and political revolutions are preparing for the world a common destiny and solution of the problems affecting the life of nations.

CHAPTER II.

CAUCASIA.

I.—THE PONTO-CASPIAN MOUNTAIN SYSTEM.

THE Caucasian mountain system is often regarded as belonging to Europe. Rising like a barrier north of the eastern extremity of the Black Sea, it must have seemed to the Greek navigators distinctly severed from Asia, whereas to the traders settled on the northern shores of the Euxine it appeared to form the southern limits of the great Scythian plains. Since that time geographers have discussed the question whether the natural confines of the two continents were indicated by the bed and marsh lands of the Phasis in Colchis, or by the Kimmerian Strait and course of the Tanais. Apart from this question, Hellenic tradition constantly kept in view these mountains, loftier than either Olympus, Etna, Hemus, or the Alps. The history of Greece itself was associated in legend with this distant range, where the first germs of civilisation were sought. Towards the shores of Colchis was directed the famous Argonautic expedition in search of the Golden Fleece, symbolizing the wealth of every sort flowing both from science, trade, and industry. Here, also, the Hellenes endeavoured to find the origin of their race. Deucalion, who peopled Greece, was son of Prometheus, and it was to a rock in the Caucasus that this Titan was bound for having stolen the fire from heaven. A sort of superstition, perhaps associated with the Promethean myth, formerly induced savants to apply the term Caucasian to all the fair European and Asiatic races, thus testifying to the instinctive reverence with which the nations have ever regarded these mountains forming the barrier between two worlds. This border-land was supposed to be still inhabited by the purest representatives of the race, whose beauty, symmetry, and graceful carriage were spoken of as physical advantages peculiar to all the white peoples. Nor has this term Caucasian yet quite disappeared from ordinary language as the synonym of the White, Aryan, or Indo-European stock.

Since the true relief of the land has been determined by Pallas and other explorers, there can be no longer any doubt that the Caucasus belongs to Asia. It is sharply separated from Europe by the deep depression now traversed by the

Manîch, and formerly filled by the waters of the Ponto-Caspian Strait. In the south the system, while preserving its character of a distinct chain, is connected by spurs and a lofty transverse ridge with the Anatolian mountains, so that it forms the advanced mass of the whole continent. Historically, also, the inhabitants of the Caucasus belong to the Asiatic world. Before the intervention of Russia the Georgians, Mingrelians, Armenians, Kurds, Tatars, and other Transcaucasian peoples maintained relations, whether friendly or hostile, chiefly with the inhabitants of Anatolia and Persia. The southern slopes facing the sun are also much more densely peopled than those turned towards the arid steppes of Europe. Hence, even after their annexation to Russia, the centre of gravity of these Asiatic lands was naturally found at the southern foot of the Caucasus, where is concentrated the aggressive force of the empire against the other regions of Western Asia. Recently a considerable strip of Turkish territory has been forcibly added to Transcaucasia, so that this division of the Caucasus, already the most populous, has become nearly as extensive as the northern. It is even larger, if in it be included the province of Daghestan, which, though lying north of the main range, is administratively regarded as part of Transcaucasia.*

The Great Caucasus.

Few ranges are characterized by a more striking unity than the Caucasus, the Kok-kaf or Kaf-dagh of the Turks and Tatars, a section of "the chain that girdles the world," according to the Oriental mythologies. Seen from the distant steppes of Mozdok or Yekaterinogradsk, stretching from horizon to horizon, it seems like a rampart with a thousand sparkling battlements. The poets call it simply the Caucasus, as if it were but one frowning mass reaching from sea to sea for a distance of 720 miles. It is also called the "Great Caucasus," in contradistinction to the irregular spurs of the "Little," or rather "Anti-Caucasus" beyond the Kura basin. Approached from the Euxine or the Russian steppes, it seems at first an impalpable vapour, a hazy cloud mingling with the fogs of the surrounding swamps; then it assumes more distinct outlines, breaking into snowy or wooded crests and deep gorges, the whole soon bounding the horizon, towering above the zone of cloud, wind, and storm, eclipsing the sun midway in its course, threatening the lowlands with avalanches and widespread ruin, hurling the foaming torrents in cascades and rapids down to the plains. Accustomed to the sight of boundless steppes or slight eminences, the Russians could not fail to be struck by these lofty summits which seemed to belong to another nature, whose charm was enhanced by the valour and beauty of its inhabitants.

* Area and population of Russian Caucasia:—

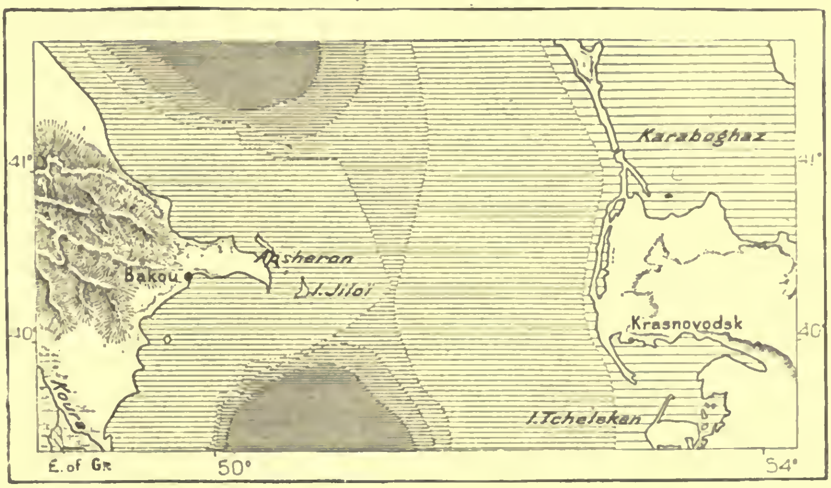
	Area in Square Miles.	Estimated Population (1880).
Ciscaucasia	88,900	1,920,000
Daghestan	11,436	500,000
Transcaucasia with Kuba	75,344	3,250,000
Recent conquests	10,636	200,000
Total	186,316	5,870,000

Russian literature reflects the deep impression produced on the imagination by the sight of the Caucasus, and by the warfare waged against its numerous tribes. Pushkin described in song the romantic scenery of Circassia; Lermontov interpreted the traditions of the inhabitants, and made the Caucasus the scene of his novel the "Hero of the Day," which had such a large share in the intellectual development of the rising generation. How many noble spirits have perished, like Lermontov himself, in this region, persecuted during life, all the more honoured in death!

The general south-east and north-west direction of the range suffers but slight deviations. It thus follows the same line as the mountains of Persia, Asia Minor, and so many other Asiatic systems. Its origin is therefore associated with the laws by which a large portion of the crust of the Old World has been modified.

Fig. 14.—Bed of the Caspian.

According to A. Grimma. Scale 1 : 5,500 000.



0 to 6 Fathoms. to 60. 60 to 120. 120 to 180. 180 and upwards.

90 Miles.

In the formation of the surrounding lands the Caucasus has even played a more important part than is evident from its apparent relief. With a regularity surpassing that of all other systems, it is continued beyond the main ridge by argillaceous hills thrown up by igneous agencies. At either extremity low peninsulas heaving with the pressure of pent-up forces are projected seawards—those of Taman on the west, and Apsheron on the east. The first is scarcely separated from another peninsula, that of Kertch, advancing from the Crimean mountains, while the second stretches across the Caspian in a line marked first by volcanic islets, and then by a submerged bank separating the two great northern and southern marine depressions. On both sides of this bank the lead sinks 1,300 feet deeper than the line of projection of the Caucasus. On the east coast the cape north of the Krasnovodsk peninsula is the starting-point of a chain of

heights, hills or single escarpments continuing the line of the Caucasus directly to the Murghab valley between Merv and Herat. Through these eminences and those of North Afghanistan the Caucasian system is connected with that of the Hindu-Kush.

The Caucasus resembles the Pyrenees in its direction, in the serrated form of the main range, in its position between two marine basins, and like them also it may be considered as consisting of two sections of unequal length. But if the gap forming the natural limit between the western and eastern sections is not situated in the middle of the range, it lies at all events almost exactly midway between the two seas. Through this depression passes the great military highway between Russia and Tiflis. On the meridian of this pass the main range contracts on either side to a width of about 60 miles between the two opposite plains, while east and west the highlands spread much farther north and south. The western section, though the narrower, is the higher of the two, for here rise the loftiest summits, six at least of which surpass Mont Blanc, culminating point of Europe.* Daghestan, *i.e.* "the Highlands," comprising the most important region of the Eastern Caucasus, is lower, but more irregular and rugged, than the western section.

The old geographers supposed that the system consisted of a simple unbroken ridge; but the investigations of Abish and others show that the general relief is much more intricate. The chain is almost everywhere formed by two ridges, and in many places even by three or four running parallel, or nearly so, with each other, and connected at intervals by nuclei, thus presenting a formation analogous to that of the Andes. The upper valleys of the Caucasus generally take the form of cirques, or elongated craters, in which are collected the head-streams, and from which they escape through a deep lateral gorge. From the orographic point of view the Koshtan-tau may be considered the culminating point of the system; for this peak, which has never been scaled, rises on the parting-line between the two slopes. Between the sources of the Kuban and of the Adai-kokh, 100 miles farther east, the watershed presents no passes lower than 10,000 feet. The first breach below this elevation is the Mamisson Pass (9,540 feet), situated at one of the sudden breaks in the main range, on a transverse ridge branching off at the Zikari Mountains. East of this pass numerous gaps occur at altitudes ranging from 6,500 to 10,000 feet. Although the triangular survey of the Caucasus has long been finished, the work of exploration is still far from complete. Since 1868 the Kazbek and Elbruz have been ascended by Freshfield, Moore, and Tucker, accompanied by the Chamonix guide Devouassoud, and several other peaks have also been scaled; yet the Alpine Clubs have still plenty of work before them, especially in the Western Caucasus.

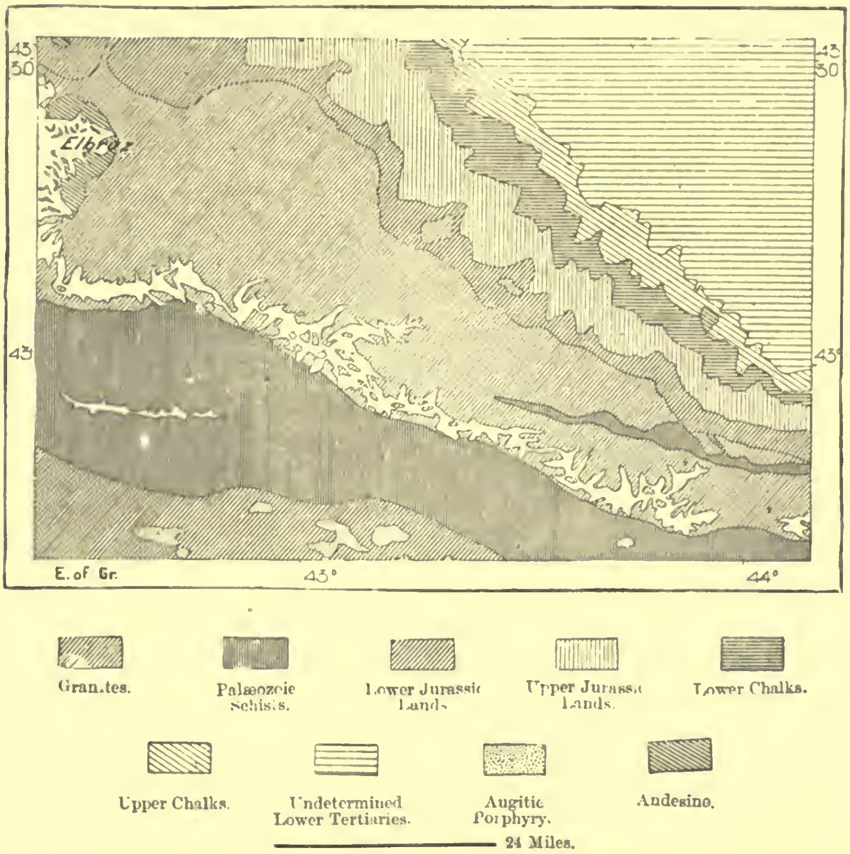
The northern and southern slopes of the range differ greatly in their general

* Chief summits of the Caucasus:—

	Feet.		Feet.
Elbruz	18,820	Kazbek	16,800
Kashtan-tau	17,370	Ushba (Besoch-mta)	16,750 (?)
Dikh tau	17,190	Aghish-tau, or Adish-tau	16,250 (?)

aspects. The latter is on the whole the more abrupt of the two, and the distance from the central ridge to the plains watered by the Kura is about one-half that which intervenes between the same point and the northern valleys of the Sulak and Terek. In the west a similar contrast is presented by the slopes facing the Rion and Kuban respectively. The descent towards the Kuban is very irregular, being broken first by a series of parallel crests, and then lower down by the projections of the upland limestone terraces resembling the glacis of a rampart, which stretch somewhat confusedly from the Euxine to the Caspian, but which present

Fig. 15.—Geological Formations of the Central Caucasus.
According to E. Favre. Scale 1 : 1,400,000.



remarkably distinct outlines about the western hemicycle of the Upper Terek. There is thus developed a vast intermediate valley between the main range and the advanced ridges of Jurassic formation. These terraces slope very gently toward the steppe, whereas the side facing the central chain is broken by steep declivities, some of which present nearly vertical walls over 3,000 feet high. These broken terraces, intersected by rapid torrents, are regarded by the inhabitants as of far greater importance than the higher eminences of the main range, for the pastures and woodlands are here parcelled out as landed property. Every prominence has its name, whereas till recently the Elbruz and Kazbek were the only peaks of the main range known by name to the lowlanders.

Geological Formation—Volcanic Action.

The regularity of the Caucasian system is not confined to the general relief, but is also shown, at least on the northern slopes, in the main features of its geology. The chief range consists principally of crystalline schists, resting here and there on granites, and diminishing in extent as we go eastwards. The Suram transverse ridge, connecting the Caucasus with the Anti-Caucasus, also consists of crystalline rocks; but here the strata are far less regular than on the northern slopes. Right and left of the great central chain, the prominences on both slopes are chiefly composed of limestone and silicious strata of various ages—Jurassic, cretaceous, or eocene. In the north these older formations are covered by the pliocene and more recent steppe lands. In their prevailing characteristics the Urukh, Terek, and Baksan valleys all closely resemble each other. Here the streams rise in wild and rugged granitic cirques, thence traversing marls and sandy clays between glens dotted with numerous villages, beyond which they enter narrow gorges, above whose chalk sides are visible the pastures and woodlands. Lower down stretches the steppe, where the torrents combine to form the Terek. About the middle of the range, between Daghestan and the Western Caucasus, a sort of geological inlet penetrates into the Upper Terek valley, where a vast horizontal plateau of tertiary grits projects like a peninsula between the surrounding chalks. Here the attraction of the hills is unusually active, the deviation of the plummet towards the intermediate rocks amounting to thirty-eight seconds between Vladikavkaz, at the northern base, and Dushet, south of the range.

Porphyries cropping out in the upper regions raise their steep crests above the snow-line, while in the central regions more recent lavas have broken through the crust, especially on the southern slopes. In the north the Elbruz, culminating point of the system, is an old volcano, which was probably active when the Euxine and Caspian were still connected by the Manîch Strait towards the close of the tertiary or beginning of the following epoch. This mountain terminates in a sort of horseshoe cirque, which seems to be a crater partly fallen in. The Kazbek also is a trachyte cone, while the crests of the "Red Hills," farther south, are all volcanic, and the route skirting the Aragva passes along the foot of columnar basalt rocks. Nor are the subterraneous forces still extinct in the Caucasus. Not only are both extremities fringed by boiling mud volcanoes, but numerous mineral and naphtha springs bubble up from underground lakes disposed in symmetrical order on both sides of the range. The hot springs are amongst the most copious in the world, though few of them seem to be associated with the igneous forces lying beneath the main chain.

Earthquakes, probably of volcanic origin, occur at frequent intervals in the valleys of the Kura and Araxis, while regular upheavals of the land have taken place at both ends of the range. The steep cliffs overlooking the little harbour of Petrovsk, in Daghestan, are scored by horizontal lines produced by the former action of the waves, although they are now some 300 feet above the present level of the Caspian. On the Abkhasian coast there are also distinct evidences of

changes of level, and as high as 500 feet there are visible old marine shores in every respect resembling those still washed by the waves of the Black Sea. The marshy springs oozing from the ground at this elevation contain shell-fish, such as the *mysis* and *gammarus*, of the same species as those now inhabiting the Euxine, though their presence has been attributed either to a former communication with that sea, or to the action of water-fowl carrying the spat backwards and forwards in their plumage. Lake Abraû, near Novo-Rossïsk, also contains a semi-marine fauna, which has gradually adapted itself to the fresh water. The remains of buildings in the alluvia near Sukhum-Kaleh, both above and below the surface, show that even in historic times the land has first subsided and then been

Fig. 16.—Hot Springs and Naphtha Regions in the Caucasus.

Scale 1 : 11,000,000.

Naphtha Regions. Hot Springs. Naphtha Wells.

180 Miles.

upheaved, and that it is now again subsiding. The ruins of a fort are at present 15 to 18 feet under water, and a large wall has been found even at a depth of 32 feet. After every storm, coins, rings, and other antique objects are constantly thrown up, and in one instance a gold coronet was discovered in the sands. Similar oscillations have occurred on the Baku coast of the Caspian, where the remains of a building are still visible near the shore.

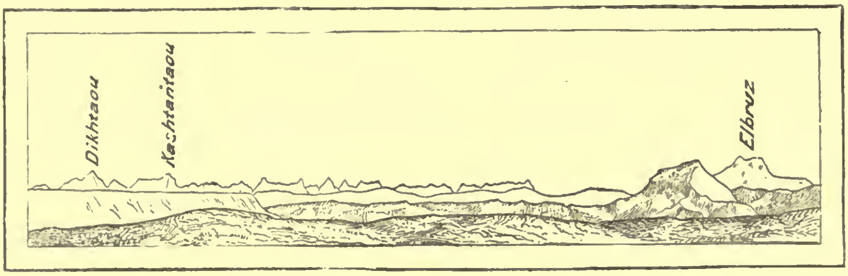
The advanced spurs of the Caucasus are not high enough to conceal the central chain from the inhabitants of the plains. From the steppes of Stavropol, a distance of 120 miles, the snowy Elbruz is distinctly visible, rising in solitary majesty on the horizon. Travellers approaching from the north see it for miles

and miles along the route, constantly increasing in size long before the presence of the range is betrayed by any other peaks to the right or left. But when it suddenly comes in sight it presents a stern, almost a terrible aspect, snow-clad only on the highest crests, here and there furrowed by avalanches, but lacking the charm and variety of the Alpine masses. Being much narrower and simpler in its structure, it is necessarily more uniform than the Alpine system. It is also deficient in grand cascades, its hills having already been furrowed by the action of water into regular river beds.

Water Systems—Snow-line—Rainfall—Glaciers.

The absence of detached masses and of broad intervening valleys deprives the Caucasus of great lakes like those of the Alps. No such lacustrine tarns even occur as are so frequently met in the Swiss and Tyrolese highlands. The fresh-water lakes, formerly stretching along the plains at both sides of the range, have been drained since the glacial period. One of these old lakes, contemporary with

Fig. 17.—Profile of the Caucasus as seen from Patigorsk.
According to Freshfield



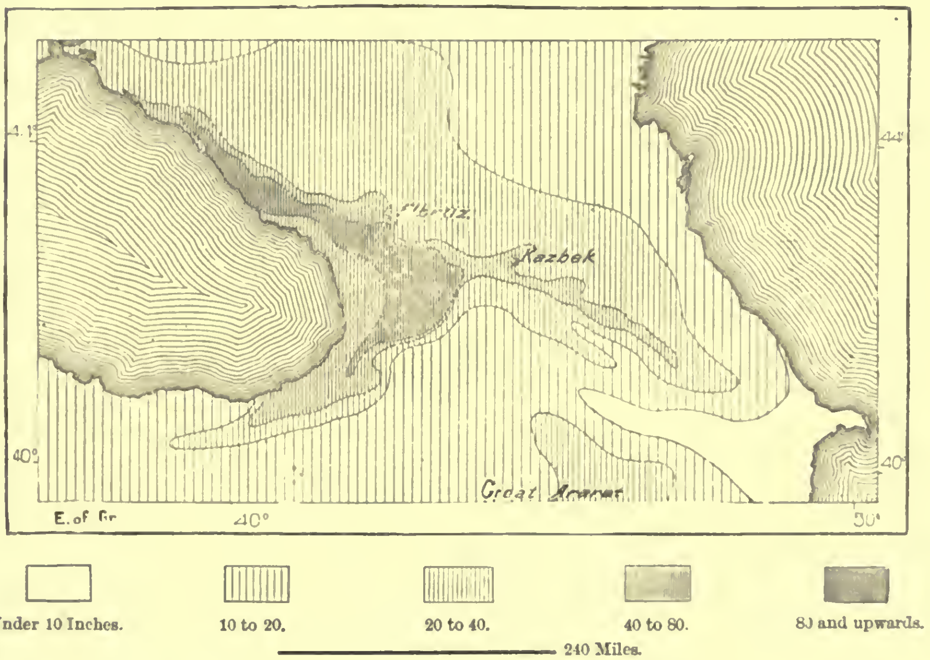
the volcanic eruptions, is now replaced by the cultivated fields of Vladikavkaz and Alagir in the Terek valley. Another of equal extent on the south filled the Karthalian basin between Suram and Mtzkhet, disappearing with the bursting of the embankments that confined the waters of the Kura. The whole of the Alazan valley, with that of its tributary the Aïrî-chai, was also flooded by a lake, which ultimately escaped through a gorge in the advanced spurs of the Caucasus. In fact, all the river valleys, those of the Kuban and its tributaries the Zelenchuck, the Laba, and the Belaya, no less than those of the Kura system, formerly served as lacustrine reservoirs, so that the Caucasian streams, like so many others, may be regarded as reduced lakes or contracted fiords. But the Anti-Caucasus, a vast hilly plateau, or rather an aggregate of irregular masses with axes at various angles, thus presents far more numerous land-locked depressions, and this system accordingly offers in its lakes a marked contrast to the Ponto-Caspian chain.

Although with a greater mean elevation than those of the Alps, the Caucasian peaks are far less covered with snow and ice, not only in consequence of their more southerly latitude and other climatic conditions, but also owing to the

narrowness of the upper crests, and the absence of cirques where the accumulated snows might serve as reservoirs of glaciers. The snow-line varies considerably with the latitude, exposure, amount of snow or rainfall, direction and force of the winds, and relative position of the several mountain masses. The extreme limits would appear to differ as much as 6,100 feet, for, according to Radde, the line falls to 8,460 feet on the western slopes of the Garibolo, whereas Parrot fixes it at 14,560 feet on the north-west side of the Great Ararat. Mount Alagöz, rising to a height of 13,660 feet in the Anti-Caucasus, is entirely free of snow in summer, and even in the Great Caucasus Ruprecht ascended to an elevation of 12,600 feet on the south side without meeting a single snow-field; but this was in the eastern section facing the Caspian. Farther west the moist winds from

Fig. 18.—Rainfall of the Caucasus.

Scale 1 : 10,500,000



the Euxine often cover the southern slopes with snow. In some of the upper valleys of the Rion basin the snowfall is said to amount to from 16 to 23 feet. On the whole, and apart from local differences, the line of perpetual snow would seem to oscillate on the southern slopes between 9,600 and 11,600 feet, and on the northern between 11,000 and 13,000 feet. Thus the mean limit is about 2,000 feet higher than in the Pyrenees, though they lie in the same latitude. This contrast must be attributed to the greater general dryness of the climate, at least on the northern slopes, and to the greater summer heats of the Caucasus. The portion under perpetual snow begins at the Oshtek, or Oshten, in the west, and extends eastwards to the Kazbek, beyond which the snow rests throughout the year only on isolated peaks.

The various meteorological stations established along the range have approximately determined the diminution of humidity, owing to which the snow-line rises gradually eastwards, according as the moist winds recede from the Euxine and approach the Eastern Caucasus, where the continental winds prevail. On the slopes facing the Black Sea the snow or rain fall is three times more abundant than in the centre, and six, eight, or even ten times more so than in the Kura basin and the Apsheron peninsula. At times not a drop of water falls for six months along the lower course of the Kura, for the influence of the west winds from the Euxine reaches no farther than the Suram Mountains, which connect the main range with the Anti-Caucasus, east of Kutaïs. The Caspian itself supplies very little moisture to the Eastern Caucasus, because the limited amount of humidity brought by north-east winds is mostly discharged on the advanced spurs at the foot of the Daghestan highlands.

Notwithstanding the excessive summer heats of this region and its higher snow-line, the mean annual temperature does not exceed that of the Pyrenees, or even of the Alps. For the cold north-east winds, being untempered by the warm south-westerly breezes, which are arrested by the Anatolian plateaux, lower the normal temperature of the Caucasus. The climates of Caucasia and Switzerland have a common mean, but the extremes are much greater in the Ponto-Caspian region than in Central Europe. The temperature in summer and winter varies in Switzerland about 18° or 19°, whereas there was a difference of 27° at Patigorsk in 1876.

The absence of snow produces a corresponding scarcity of glaciers. Yet they are numerous enough, especially about the Elbruz, and there is almost continuous ice for a distance of 120 miles between the Juman-tau and the Kaltber, above the Ar-don valley. The lowest glacier is that of Kalchi-don, or Karagan, which drains from the Adai-kokh into the Upper Urukh valley. According to Freshfield the only Swiss glacier of equal length is that of Alech. But as a rule the frozen streams of the Caucasus descend no farther than 7,000 feet above the sea; that is, several hundred feet above the corresponding limits in the Swiss Alps. Unlike the snow, they reach a lower point on the northern than on the southern slopes, a fact due to the general relief of the mountains, which are much more abrupt on the south than on the opposite side, where they slope northwards in long valleys. Unmistakable evidences of the passage of former glaciers show that in the Caucasian, as in the European mountain systems, the frozen streams reached a much lower depth formerly than at present. About the outlets of the Malka, Baksan, and Terek valleys there occur erratic boulders suspended at a slight elevation along the slopes of the bluffs overlooking the plains. The Yermolov stone, near the northern entrance of the Darial Gorge, is 96 feet long, with a bulk of 197,900 cubic feet, and similar blocks 26 feet long are met at Vladikavkaz, and even 5 miles farther north. In Svania the upland villages now standing over a mile from the extremity of the glaciers are built with the detritus of the moraines here stranded from former glaciers.

At present the best known and most frequently visited glacier in the Caucasus is the Devdoraki, or Devdoravki, one of the eight that descend from the Kazbek.

THE DARIAL DEFILE.

It is visible at a distance of over 5 miles west of the valley watered by the Terek, and crossed by the military route between Vladikavkaz and Tiflis. Its lower course is subject to sudden and violent floodings, and while most of the other Caucasian glaciers are retreating, the Devdoraki has advanced 770 feet between the years 1863 and 1876. The general progress of the ice has been calculated

Fig. 19.—The Kazbek: View taken from the Kazbek Station.

not to exceed 4 inches a day, whereas the average velocity on Mont Blanc is about 12 inches.

Vegetation—Fauna.

While the lower limit of the ice-fields is higher in the Caucasus than in the Alps, forest vegetation reaches a higher point. True timber flourishes at a mean elevation of 7,730 feet. Then come the azalea and rhododendron, the dwarf laurel and bright green sorrel, and lastly, the Alpine plants of the pastures. The zone of trees is higher on the northern than on the southern slopes, thanks, doubtless, to their greater humidity; for, although they receive less rain, they

lose less by evaporation. The greatest elevation is reached, not by evergreen pines, as in Central Europe, nor by the cedar and larch, as in Siberia, but by the birch, while the great forests of the slopes consist chiefly of conifers, the maple, lime, ash, hornbeam, beech, oak, and chestnut. The valuable box, so largely exported to England, and thence to the rest of Europe, forms in certain parts of Lower Transcaucasia impenetrable masses of vegetation, which, especially between Poti and Nikolaya, covers the whole coast of the Black Sea. The queen of Caucasian shrubs is the *Azalea Pontica*, one of the glories of terrestrial vegetation. This lovely plant, whose blood-red autumn foliage contrasts with the dark green of the fir, occupies a zone at least 6,000 feet in vertical height between the

Fig. 20.—Kazbek and Devdoraki Glaciers.

From the Map of the Russian Staff. Scale 1 : 160,000.

3 Miles.

advanced offshoots and the slopes upwards of 6,600 feet high. In some places the azalea is replaced by the rhododendron. The traditional belief in the intoxicating and even maddening effects of its honey has not been confirmed by more recent observation, and would seem to rest on altogether exceptional facts. In Kabarda, where bee-farming is largely developed, no such evil consequences are attributed to the honey of the azalea.

On the lower slopes the wild vine twines round the trunks of the trees, whose branches are festooned with its foliage, intermingled with that of other twining plants. The vine is probably here indigenous, and the walnut is also supposed to have originated in the valleys of Imeria. In no other region are there so many stone fruits, several species of which, elsewhere unknown, are found growing wild in the

forests of Karthalia, south-west of the Kazbek. The Caucasus is, in fact, the classic land of fruit trees, and the gardens, especially of Mingrelia, abound in flowers and fruits, to which Western culture might easily impart an exquisite perfume and flavour. But as we proceed eastwards from the well-watered shores of the Euxine to the arid Caspian seaboard the vegetation gradually diminishes; the forest lands become less numerous as we approach the eastern extremity of the main range; the dry steppe winds burn up the grass itself, and the solar rays are reflected on the bare rock. Some Russian plants grow with difficulty even at elevations where they find a mean temperature answering to that of their native homes. The Russian soldiers have succeeded in acclimatizing the European

Fig. 21.—Forests of the Caucasus.

According to Petermann. Scale 1 : 11,000,000.

180 Miles.

vegetables in the upper valleys of Svania, but the beloved birch-tree, which might remind them of their distant fatherland, nowhere acquires a vigorous growth.

The cultivated no less than the wild plants reach a much higher elevation on the slopes of the Caucasus than in the Alps, a fact due to the greater summer heats of the former region. In the district destined some day, perhaps, to be pierced by the tunnel of the future Caucasian trunk line between the Ar-don and Lakhva basins, all the upland villages are surrounded by barley-fields to an altitude of over 6,500 feet. In Ossetia this cereal reaches the village of Kolota (8,230 feet), and farther south it ripens on the slopes of the Alagöz at an elevation of 8,300 feet. Wheat also is grown as high as 6,700 feet, or 3,300 feet higher than in the Alps; maize reaches 3,000 feet, and the vine 3,630 feet, near the village of

Kurta, in Ossetia; but the best vintages of Kakhetia are those of the Alazan valley, 2,500 feet above sea-level.

Many Caucasian forests have been cleared for agricultural purposes, but many more have been wantonly destroyed, and the destruction is still going on in the most reckless manner where timber most abounds. To save the labour of felling the trees, they are burnt down at the risk of setting fire to whole forests. When fodder fails, the trees are destroyed, and the cattle fed with their leaves and sprouts. Hence many regions formerly densely wooded are now bare, and even on the upland slopes the woodlands are rapidly disappearing.

In spite of the ravages of man, most of the original wild animals of the Caucasus are still found there. The chamois and the *tour*, a species of wild goat, frequent the upper valleys, and some herds of the bison or wisant, wrongly described as the *aurochs*, roam over the forests watered by tributaries of the Kuban at the foot of Mount Elbruz. The Caucasian bear, less formidable than the Russian, is found no higher than 5,000 feet, the limit of fruit trees. Like the wolf and lynx, he inhabits the Abkhasian forests, and Prendel met one within 6 miles of Sukhum-Kaleh. The wild boar haunts the thickets of the lowlands, especially along the banks of tarns and rivers. The tiger, said to have come from the plateaux of Persia, rarely ventures to show himself on the plains of Transcaucasia, and never penetrates into the upland valleys. The leopard, hyena, and jackal are not unfrequently met about the Lower Kura, and the jackal occasionally finds his way across the main range to the forests of the northern slopes. In its fauna and flora Transcaucasia already belongs to the sub-tropical Asiatic world, whereas in this respect Ciscaucasia must still be included in the European zone.

Inhabitants—Varied Ethnical and Linguistic Elements.

The well-watered Transcaucasian plains might support as great a population as France, and two thousand years ago were probably abundantly peopled. The northern valleys are also fertile enough to supply the wants of millions; yet Caucasia is on the whole less densely peopled than Russia itself. In the north the steppe prevails, and here the population is restricted to the river banks. In the south also the plains of the Araxis and Lower Kura have remained unpeopled, owing to their extremely unhealthy climate, while in the highlands nearly all the region above the forest zone is a solitude of pasture, rocks, or snows, frequented only by a few herdsmen and hunters. The highest Caucasian village, Kurush, in the Daghestan highlands, about the source of a head-stream of the Samur, is 8,200 feet above sea-level, an elevation nearly equal to that of the Hospice of the Great St. Bernard in the Swiss Alps. But the summits of the chain rise from 6,000 to 9,000 feet above this last inhabited spot of the Caucasus.

The most healthy zone lies between 2,500 and 6,650 feet, and here are situated the sanitary stations where most of the officials of Tiflis, Erivan, and Yelisabetpol spend the summer months. The most favourite elevation is 4,000 feet, where the vine, mulberry, and southern cereals still flourish, and where the pure and cool air

ETHNOGRAPHICAL MA

Scale 1

0

NEW YORK

OF THE CAUCASUS.

600,000.

100 Miles

.PPLETON & Co

from the glaciers prevails. The Tatars of the hot valleys harvest their maize in May, send their families and herds to the hills, and soon join them themselves, returning to the plains in time for the autumn vintage. Some of the insalubrious districts remain uninhabited except by a few of the peasantry engaged in irrigating the maize and rice fields. Still the population is densest, not in the healthy region of the advanced spurs, but in the valleys watered by the large rivers and traversed by the main highways. Here the population may easily be doubled as soon as the now forsaken irrigating canals are reopened, thus bringing under cultivation all the valleys of the Araxis and Kura. According to the old chronicles Transcaucasia was formerly six times more populous than at present. When the Mongolian prince, Batu Khan, seized the land in the thirteenth century he compelled every tenth adult male to serve in his armies, thus raising a force of 800,000 men. This would imply a population of 16,000,000, probably about the same number as in the time of Strabo.

At the beginning of the present century commercial relations had fallen off to such an extent that the highways leading from the Euxine to the Caspian, formerly followed by Greeks, Romans, and Genoese, had been completely abandoned. In 1823, for the first time probably for centuries, merchandise was transported from Redout-Kaleh to Baku, and this was considered a memorable event. Even now the communications between the two slopes of the main range are beset with difficulties. It is still untraversed by a line of railway, and till recently the two divisions of Caucasia were connected by one carriage road only. This route, frequently out of repair, and occasionally even destroyed by avalanches and detritus, runs east of Mount Kazbek through the gorges of the Darial, at all times so important in the records of migration and conquest. Known to the ancients as the "Gate of the Caucasus," this route forms in reality a rocky approach, whose issues were defended by strongholds, now replaced by the fortified stations of the Russians.

East of the range the narrow strip of coast commanded on the one hand by the escarpments of the Caucasus, limited on the other by the waters of the Caspian, offered a second and easier highway to the invading or migrating tribes advancing from Asia to Europe, or from Europe to Asia. But this route might here and there be blocked, and one of the passes at the extremity of a ridge in Daghestan was barred, like the Darial Gorge, by a *derbent*, or "fortified gate," whence the name of the town commanding this part of the coast. The Euxine seaboard skirting the Western Caucasus seems since the Roman epoch never to have served as an historical route. But at that time the two divisions of the kingdom of Mithridates were connected by a road skirting the coast, and at several points milestones are still standing, which the Abkhasians look on as "fairy altars." But this road has been deserted since the Byzantine epoch. For centuries this coast-line, some 250 miles long, has been beset by too many natural obstacles, and guarded by tribes of too fierce a character, to serve as a military route, more especially as the sea was always open to Greeks, Genoese, Turks, and Russians to prosecute their commercial or warlike enterprises with the peoples of the Caucasus. The Genoese roads, of which traces have been discovered, did not follow the coast,

but crossed the hills, thus connecting the inland districts with the Euxine seaports.

But these great highways were not forced without a struggle, and every fresh invasion scattered fresh fragments of nations amongst the surrounding upland valleys. Thus the Caucasus has become, in the language of Abulfeda, "The Mountain of Languages," an expression still current in Persia. Strabo tells us that the Greek traders frequenting the port of Dioscurias, on the Euxine, met there no less than seventy peoples, all speaking distinct languages, and Pliny adds that in his time one hundred and thirty different idioms were current in the same place. At present the languages and dialects of the Caucasus are still estimated at seventy. But Uslar, first of Caucasian philologists, points out that every local variety is regarded as a distinct language by traders and travellers, and that in reality the numerous Caucasian dialects may be grouped in a small number of families. Thus the thirty of Daghestan are reducible to five radically distinct. Many were formerly spoken by powerful and widely diffused peoples, now represented only by a few remnants lost amongst the hills, and whom a geologist has compared to erratic boulders, the scattered fragments of now vanished mountains.

The Caucasus, which stands out so boldly against the boundless and monotonous Russian steppes, contrasts no less strikingly in its varied peoples, races, and languages with the vast Slav world stretching from the Euxine to the Frozen Ocean. Nevertheless the Russians are now slowly penetrating into the valleys on both slopes of the main range, where they already number about 1,400,000, or nearly one-fourth of the whole population. They are in a decided majority in the districts bordering on Russia proper; that is to say, in the province of Kuban and the government of Stavropol. Even in Transcaucasia they form one of the chief ethnical elements, especially in the towns and military stations, and here and there their Cossack or nonconformist settlements give a great local preponderance to the Slav race. Whilst many native tribes are disappearing either by extermination or forced or voluntary exile, whilst others are slowly diminishing in the struggle for existence with the Russian invaders, the latter are steadily increasing in the north by ceaseless encroachments on the ethnical frontier-lines, in the south by scattered colonies continually expanding, and thus approaching each other and absorbing the intervening spaces.*

Russian Conquests—Main Physical Divisions.

The long and laborious conquest of the Caucasus, which took about two hundred years, is now a familiar topic. In the north the Russians at first confined them-

* Population of Caucasia according to races:—

	Estimated Population. 1858.	1880.
Russians	840,000	1,410,000
Georgians	830,000	1,150,000
Tatars and Turks	825.000	1.330,000
Armenians	520,000	720,000
Lezghians and other Highlanders	1,400,000	1,050,000
Persians. Tats, and Talishes	75.000	120,000
Other races	36,000	90,000

selves to a line of fortified stations, where the Cossacks kept constant guard, ready at the first signal to leap into the saddle. The Transcaucasian provinces were originally nothing but foreign lands possessing no cohesion with the rest of the empire, but the pressure of the dominant race gradually increased. All the lowland tribes were finally subdued, while those of the uplands were compelled from year to year to contract the limits of their warlike incursions. The Russians not only commanded both seaboards, enabling them to lend a helping hand to their allies or subjects in Mingrelia, Imeria, and Georgia, but they were from the first in possession of the breach presented by the Caucasus between the Terek and Aragva valleys. In 1769 the Darial Pass was crossed by 400 Russians, and in 1784, 1795, 1796, and 1799 they again utilised this route. In the beginning of the present century, when Georgia became an integral part of the empire, a military route connecting Transcaucasia with the north was constructed along the Terek and Aragva valleys, whereby Caucasia was henceforth divided into two distinct fragments. Pushkin describes the risks still incurred in 1829 by travellers, traders, and others on this highway. The daily progress under armed escort from station to station was little more than 10 miles. This first route was succeeded by another over the Mamisson Pass, between the Terek and Rion valleys, and by others through the lateral valleys, cutting off the forests in which the highlanders lurked to fall upon the Russian foe. "I should like," said Shamyl, "to anoint with holy oil the trees of my forest, and mingle fragrant honey with the mud of my highways, for in these trees and this mud lies my strength." But although the bogs are far from having disappeared, the upland forests are no longer inaccessible, and their inhabitants have been subdued. In a song by Lermontov the Kazbek is represented as rising in its majesty, and looking with scorn on the puny swarms approaching from the northern plains to scale it. But when it sees them armed with pickaxe, shovel, and hatchet, grubbing in the soil and felling the trees, it trembles to its base, for it now understands that the day of thraldom is at hand.

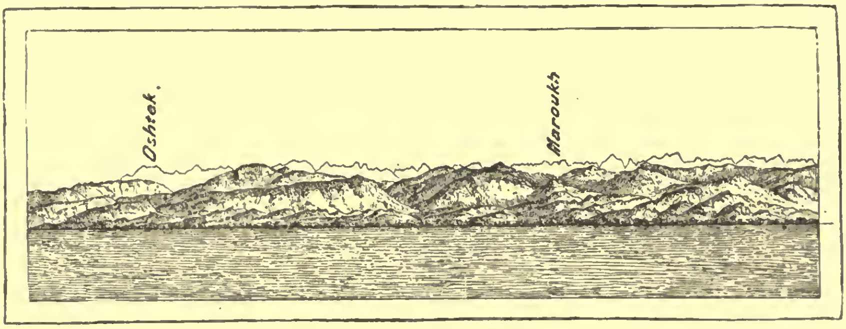
Caucasia consists of a number of distinct physical and ethnical regions, which must be described apart, although they are becoming daily more united by the bonds of common interests. All the Western Caucasus, tapering towards the Sea of Azov, forms, with the Kuban basin and neighbouring steppes, one of these natural regions; another comprises the Central Caucasus, the home of so many different tribes; while a third embraces the Eastern Caucasus, whose inhabitants are sometimes collectively known as Gortzi, or "Highlanders." The Terek basin, the plains and lakes of the Kuma, the half-drained bed of a former sea, offer a marked contrast to this highland region. In the south the Rion and Chorukh basins, partly rescued from the Turks, are inhabited by people of one stock, and constitute a fairly well-defined ethnical province. But in the east the districts watered by the Kura offer no such racial unity, for this region is shared by both Georgians and Tatars. Still it forms at least a distinct geographical province, and the same may be said of the Araxis valley, which is occupied by Tatars and Armenians in common.

II.—WESTERN CAUCASUS: KUBAN BASIN.

ABKHASIANS, CIRCASSIANS, COSSACKS OF THE BLACK SEA.

West of the highlands culminating with Mount Elbruz, the Caucasus becomes a coast range, falling in abrupt escarpments towards the Black Sea. The slope is continued to a great depth under the surface, for even close to the shore the sounding-line reveals a depth of over 12,000 feet. The first section of the coast range west of Elbruz retains a great elevation, and is commanded by snowy crests 10,000 to 12,000 feet high. Here also, as in the Central Caucasus, the main ridge is flanked by parallel chains, which with the transverse ridges form long depressions, and invariably present their steep sides towards the middle chain, their gentler slopes towards the sea. The tracks across the range ascend the valleys parallel with it until they reach the passes, and thus easily skirt the peaks. Near Mount Elbruz the range rises above the snow-line. Here are the Juman-tau, the Marukh, and in the centre the magnificent Oshten, or Oshtek, beyond which the

Fig. 22.—The Western Caucasus seen from off Cape Kodor.
According to Dubois de Montpéreux.



crests diminish rapidly in elevation towards the north-west. The last point taking the name of mountain is the Idokopaz, south-east of the port of Novo-Rossiisk, after which there are nothing but hills, whose base merges with the alluvia of the Taman peninsula.* The range is crossed by few and little-frequented tracks, and even the military station of Sukhum-Kaleh is unconnected by any direct strategic route with the Kuban valley. Pending the completion in 1883 of the carriage road, travellers are obliged to follow the coast across the sandy and shingly beach.

River Systems—Kuban Basin.

Although the coast climate is very moist, the streams flowing to the Euxine are too short to be very copious. They are mostly mere torrents, which carry off the

* Chief elevations in the Western Caucasus:—

	Feet.		Feet.
Oshten	9,506	Nashar Pass (near Mount Elbruz)	9,774
Marukh Pass	11,660	Psegashko Pass	6,360
Sancharo Pass	8,000	Idokopaz	2,450

rain-water falling on the uplands. But a few rivers in the southern valleys, such as the Kodar, Bzîb, and Mzîmta, acquire a certain importance, thanks to the parallelism of the main chain and side ridges enclosing their upper courses. Most of these upland valleys bear the traces of old lakes, which have been drained either by the torrents or by underground streams making their way through caverns excavated in the Jurassic limestone rocks. Thus the Mîchish, represented on most maps as an independent river, is really a branch of the Bzîb, passing for 2 miles under the Pskhuv Mountain, and escaping through an outlet near the coast. The Pitzunda River, running close to the Bzîb, presents a phenomenon of a different order, for it seems to have changed its course within the historic period from the south to the north of Pitzunda.

The Abkhasian streams are of little importance except for irrigation purposes in the lovely gardens and orchards on the coast. Here the palm is associated with European plants, beneath whose shade wind avenues of the rose and jasmine. But most of the streams flowing from the hills now form swamps at the outlet of their valleys, where they poison the atmosphere and decimate the people. Hence the natives generally fix their homes far from the unhealthy coast lands, either in the forests or on the bare plateaux. As soon as the climate has been improved by drainage and clearing the ground of its rank vegetation, this part of the Euxine seaboard, some 240 miles long, will become a second Crimea for the Russians. Still the Abkhasian coast, while warmer and less subject to fogs than the Crimean, has the disadvantage of being less sheltered except on the south side of the lateral ridges. The average high temperature of the water contributes greatly to raise that of the land, which till the end of November stands as high as 58° or 59° Fahr., varying at Sukhum-Kaleh in winter from 45° to 46° Fahr. The south-west gales blow with great violence in spring and autumn, and during their prevalence navigation is very dangerous on a coast destitute of good harbours of refuge. The Abkhasian seaboard is completely sheltered from the cold north-east blasts which sweep the Caspian and Kuma steppes. But at its northern extremity Western Caucasia is not sufficiently elevated to arrest this *bora* of the Euxine, as it has been called by the Italian and Greek sailors frequenting these waters. On January 12th, 1848, the vessels riding at anchor off Novo-Rossiisk were driven seawards or stranded, and one of them sank with all its crew, borne down by the weight of the dense spray suddenly freezing in the rigging and on deck.

The northern slope of the coast range belongs to the Kuban basin. This river, the Kuman of the Nogai Tatars, and Kubin of the Abkhasians, is fed by the Elbruz glaciers, and receives all the torrents and streams of the Western Caucasian valleys, except a few rivulets lost in the steppe before reaching the main stream. Swollen three times during the year by the spring rains, the melting of the snows in summer, and the autumn downpours, it often assumes the proportions of a large river from 700 to over 1,200 feet wide, and upwards of 10 feet deep. But at low water in August and September it is nowhere more than 4 feet deep, and in some years the northern arm of its delta runs dry. All attempts have hitherto failed to render it permanently navigable, although since 1873 the steamers from Kertch

ascend as far as the Tiflisskaya stanitza 16 miles west of the Rostov-Vladikavkaz railway. Beyond this point it is navigable only for flat-bottomed boats.

Thirty miles from the coast the Kuban, which has a mean volume estimated at 39,000 cubic feet per second, branches off into two arms, and these again ramify into numerous minor channels. The Protok, the main northern branch, flows

Fig. 23.—The Akhtari Liman.

From the Map of the Russian Staff. Scale 1 : 640,000.

towards the Akhtari liman, an inlet in the Sea of Azov. The Kara-Kuban, the southern and most copious, after traversing the marshy lands of the Taman peninsula, again ramifies below Temrûk, discharging partly into the Sea of Azov, partly into the Euxine through a shifting *boghar*, or sandy channel inaccessible to large craft. The two mouths are distant 66 miles in a straight line, and at least 130 round the coast. The delta itself, which resembles that of the Nile in form,

consists of alluvial deposits made in the inner basin of a "liman," or lagoon, separated by an older strip of sand from the Sea of Azov. The soil held in solution by the Kuban being in the proportion of 1 to 480, these deposits would have rapidly filled the liman were they not carried away by the current partly to the Sea of Azov, and partly directly to the Euxine.

Taman Peninsula.

The lower stream has often shifted its bed, and islands and channels have so frequently changed place that the descriptions of the old writers are no longer intelligible. So recently as the fifteenth century the chief discharge was into the Sea of Azov, and since that time it has oscillated between the two branches, every fresh inundation modifying the currents. The Taman peninsula is everywhere studded with marshes and *eriks*, or false rivers, the remains of former freshets, and with river beds and banks showing in their alluvial strata the successive levels of the stream. Although about 24 miles broad, the whole peninsula is frequently transformed to its former insular condition by the lakes and side channels of the main branch. But though thus surrounded by water, this is not a lowland district, for it consists of five parallel chains of hills, occasionally rising 480 feet above sea-level, and separated one from the other by alluvial tracts, which were formerly inlets, and are still partly covered with lakes.

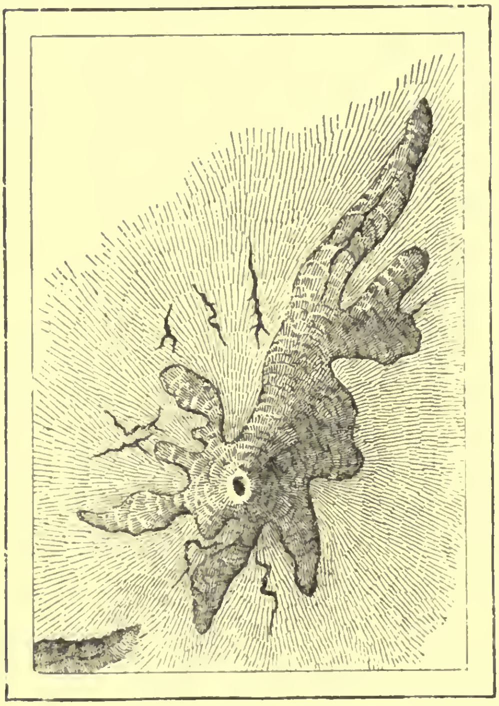
The mud volcanoes of the Taman peninsula seem to have been at one time far more active than at present. They run exactly in the line of the axis or continuation of the parallel ridges, and it was in the same line that a volcanic islet was erupted in 1799 near the town of Temrûk. This mud islet, which was about 1,330 feet in circumference, with an elevation of 13 feet above the sea, soon disappeared, but was replaced in 1814 by a second cone, which remained some time above the surface. These mud hills of the Taman peninsula are amongst the most remarkable on the globe, for they present the complete succession of phenomena from the simple oozing of mud to distinct volcanic eruptions. The Temrûk islet is said to have vomited smoke and flames in 1799, and the Kuku-Oba, or "Blue Hill," 7 miles north-west of Taman, opened its crater in 1794, ejecting flames and fragments of frozen earth to a distance of over half a mile. Other volcanic cones cast up stones, accompanied by argillaceous muds, seaweed, roots of rushes and other aquatic plants, showing that they evidently communicated with the bed of the limans and sea. Formerly numerous fragments of Greek and Scythian pottery were found amongst the erupted matter, and in the immediate vicinity of the cones. In explanation of this fact Pallas suggests that the ancients may have been accustomed to throw in vases and other objects as offerings to the volcanoes.

The naphtha springs of the peninsula and north side of Western Caucasia also run in the line of the mud cones. The tertiary lands whose clays and marls contain this valuable substance occupy an upheaved area of at least 620 square miles, and are also continued under the limans. Lake Temrûk itself contains a

small quantity, which, however, does not prevent the pike, perch, prawns, and other fish from living in its waters. Although wells have been sunk only in the most promising sites, the results have been so far quite as satisfactory as might be expected. The works were begun in 1866 in the Kuda-ko, or "Naphtha Valley," on a piece of ground presented by the Czar to one of his generals. The first well yielded about 2,400 gallons daily, but most of this mineral oil was lost, the reservoir having been swept away by sudden rains. The well itself soon ran dry, but six others were opened in 1870, which jointly yielded 62,000 tons a year. After the boring the jets of naphtha often rose to a height of 50 feet above the ground. Were the district properly worked and connected by rail with the Anapa coast and Kuban basin, it might produce 700,000,000 gallons of distilled oil yearly.

Fig. 21.—The Kuku-Oba Mud Volcano.

According to Pallas. Scale 1 : 23,000.



1,650 Feet.

Inhabitants—The Cherkesses.

Few regions of the Old World have shifted their populations more frequently than Western Caucasia and the Kuban basin. Since the middle of the century wars, massacres, and exile have caused the disappearance of tribes and whole nations from the valleys limited eastwards by the Elbruz, where they have been replaced by other races. The course of history has been abruptly arrested; traditions, languages, dialects, have irrevocably perished, nothing remaining in the land except geographical names more or less distorted in the untrained mouth of strangers.

In the last century the steppes of Circassia were still mostly peopled by the Cherkesses, who even owned grazing lands north of the Kuma, and procured their salt from the lakes in the Manich depression. In 1859 they numbered about 500,000 in Western Caucasia, and even in 1864, after the wars ending in the Russian conquest, they were still estimated at 300,000. But now they have ceased to exist as a distinct nationality in the country, and in all Caucasia they will soon be represented by a few individuals only. The Abkhasians also of the Euxine seaboard and southern valleys have mostly disappeared, although nominally subjected to Russian rule since 1810, and treated far more leniently than the Cherkesses. They were reduced from about 150,000 in 1864 to 50,000 in

1877, and whole valleys were completely deserted when over 20,000 emigrated in mass after the struggle between the Russians and Turks for the possession of Sukhum-Kaleh during the late war. Their place has been partially supplied by Russians, and the sites of their former habitations are now known only by romantic graveyards overgrown with the wild plum, apple, pear, and vine.

Vanquished by the armies of Nicholas, the Adigheh, or Cherkesses of the northern slopes and Upper Kuban valleys, preferred exile to permanent subjection to the Russian yoke, 76,000 alone accepting the conditions offered them by the Russians. Happy to be rid of such enemies, the Government hastened to facilitate their departure, and their exodus ended in wholesale transportation. A proclamation issued in 1864, after the last battle, ordered all the Adigheh "to quit their valleys" within a month's time under pain of being treated as prisoners of war. The order was obeyed, and over four-fifths of the people were driven at the point of the sword from valley to valley until they found refuge in Anatolia, Cyprus, the Balkan peninsula, and other parts of Turkey. Thus were 260,000 transported by sea to the temporary depôts at Trebizond, Samsun, and Sinope during the first six months of 1864, and according to the official returns 398,000 Cherkesses emigrated between 1858 and 1864. It is easy to understand what the sufferings and mortality must have been of these refugees, crowded on board small craft, or exposed in wretched hovels to hunger, cold, and hardships of every sort. In many places more than half had perished of starvation or disease a few months after quitting their homes. And even on reaching the districts assigned to them, they found themselves surrounded by hostile populations, of different race, speech, religion, and customs. They themselves assumed the air of conquerors, continuing their warlike or predatory habits, and seizing with the sword the fruits of the plough. The exile of the Cherkesses was disastrous alike to them and to those with whom they were thrown.

Although but few Cherkesses survive in the Caucasus, they have so long been regarded as typical of the Caucasian tribes generally, and they have exercised so much influence on those who have not yet emigrated, that they require to be studied as they existed before the exodus of 1864. At that time their determined resistance to the Russian invader had earned for them the reputation of being one of the most heroic peoples on the globe. Their chivalrous traditions, the patriarchal simplicity of their habits, their physical beauty and symmetry of form, rendered them unquestionably the foremost race in the Caucasus, so that their name came to be often applied in a general way to all the highland tribes. Unfortunately they lived only for war, and the very word Cherkess was usually explained to mean "Brigands," "Banditti," or "Highwaymen," although it more probably derives from the *Kerketes* of Strabo. Strangers find extreme difficulty in pronouncing their rude and guttural language, and in their warlike expeditions they are said to have made use of a peculiar dialect.

The Cherkesses belong probably to the same stock as the Georgians, Lezghians, Chechenzes, and other mixed or non-Aryan tribes of Caucasia. Mostly very handsome, they are tall, slim, and broad-shouldered, with oval features, light

complexion, bright eyes, abundant hair, mostly black, but occasionally also chestnut and fair. Both sexes consider obesity and other physical defects as disgraceful, and those who are so afflicted abstain from appearing at the public feasts and popular gatherings. Regarding beauty as the privilege of their race, they seldom intermarried with aliens. Their dress, of a remarkably elegant type, is admirably suited to these erect and pliant figures, and has accordingly become a sort of national costume for all the Caucasians, including even the Russian Cossacks and the peaceful Jews, who are sometimes found wearing the *cherkeska*, with its cartouch pouch, in their case "more ornamental than useful."

Like the Albanians of the Pindus highlands, with whom they present many points of resemblance, the Cherkesses regard the vendetta as the supreme law. Blood demands blood, and the murderer must die, unless he purchase redemption, or succeed in kidnapping a child from the family of his enemy, in order to bring it up as his own, and then restore it to the paternal home. Family feuds lasted for generations; yet, unlike his Svanian neighbour, the Cherkess scorned to lurk in stone houses, but, trusting to his strong arm, resided only in slightly constructed wooden huts. Vengeance, however, was never exacted in the presence of women, sacred beings, who might with a gesture arrest the hand of the slayer, and who yet belonged themselves to fathers or husbands claiming the right to kill them with impunity. According to the old custom, the young man seized by force his intended bride. The daughter of the Cherkess knew beforehand that she must quit the paternal home either by a real or feigned abduction, or else be sold in foreign lands; yet such is the force of habit, that the thought of exile and the life of the harem seldom caused her any dread. Traditionally, however, they confidently expected that their beauty, good manners, and poetic language would insure to them the position of legitimate wives of distinguished persons. The boys, on the other hand, were generally brought up, not by their parents, but by an *atalik*, or "teacher," chosen especially for his physical and moral qualities, his courage, politeness, eloquence, skill in arms and horsemanship. When his education was over the young man returned to his home, but never ceased to regard the atalik as a true father. Thanks to the care thus taken in their education, the Cherkesses claimed to have become "the most polite people in the world."

Although proud of their national freedom, they were not all equal amongst themselves. Yet, while forming three castes of princes, of nobles reduced by intestine feuds, and the simple peasantry, all were grouped in *fleûsh*, or "brotherhoods," and it was these associations of men devoted to each other unto death that rendered their resistance so formidable to the Russians. The authority of the nobles prevailed mostly in the plains, where they had in some places succeeded in establishing a quasi-feudal system. But their peasantry fled to the highland Cherkesses for protection. Hence the incessant wars, resulting in the defeat of the nobles, many of whom adopted the fatal policy of applying to strangers for aid. Below the three classes of freemen there were the slaves, consisting exclusively of refugees and prisoners of war. The will of the freemen expressed in the

JEWS OF THE CAUCASUS.

public gatherings had the force of law, and the princes and nobles constituted the executive. The priests, though ranking with the lords, had but little influence, for, owing to the confusions of creeds, the Cherkesses were at once pagans, Christians, and Mohammedans. As pagans they worshipped Shibleh, god of thunder, war, and justice, and to him after the victory were sacrificed the fairest of the flock. They venerated the tree blasted by lightning, beneath which the criminal found a safe refuge. The gods of the air, water, woodlands, fruit trees, and herds, all animated by the breath of the Great Spirit, had also their special worship, and received offerings, if only a few drops solemnly poured out from the goblet. To soothe the stormy sea, and induce it to spare the mariner, mother, wife, or betrothed committed her votive offerings to the mountain torrent, by which they were borne to the Euxine, whose response was the soughing of the winds and the banking up of the clouds.

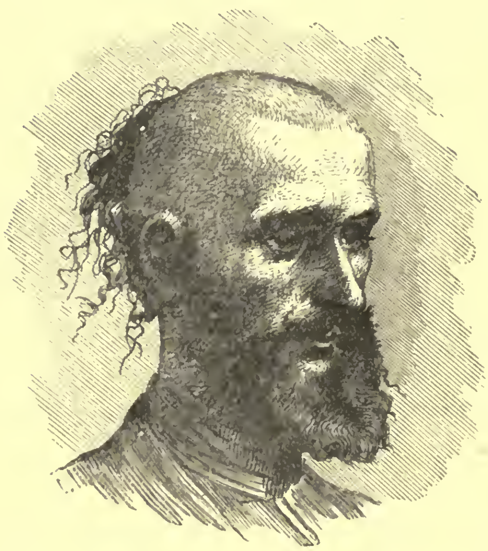
Such was the religion of the ancient Cherkesses; but till the latter half of the eighteenth century the nobles mostly claimed to be Christians, and worshipped in the chapels, whose ruins are still met here and there on the hill-tops. But the Sheikh Mansûr, whom the Russians afterwards sent to die in the island of Solovetz, in the White Sea, made nearly all his countrymen Sunnite Mohammedans. The influence of the Crimean khans worked in the same direction, and the faith of Islam became more and more intensified according as hatred of the Christian Muscovite invaders increased. Nevertheless certain Moslem practices, especially polygamy, were not generally introduced, and the old family life held its ground. In religious zeal neither the Cherkesses nor other western highlanders are to be compared with the Kara-chai, or "Black River" Tatars of the southern Kuban valleys, west of Mount Elbruz, who are strict Mohammedans, engaged in trade, and as intermediaries between the northern and southern Caucasian tribes.

The Abkhasians and Cossacks.

The Abkhasians, who still retain in a slightly modified form the name of Abazes, by which they were known to the Greeks, call themselves Absua, or "People." Before the great emigrations they occupied nearly all the southern slope of the Caucasus between the Ingûr and Bzîb valleys, and at certain points encroached on the Cherkess territory on the opposite slope. Their speech resembles that of the Adigheh, but they differ greatly from them in appearance and customs. The Absua are shorter, of browner complexion and blacker hair than the Cherkesses, and their features are mostly irregular, with a harsh, wild expression. Hence slaves of this race commanded no more than half the price of their Circassian neighbours. Though of less chivalrous appearance, like them they preferred to live by the sword, or scour the sea as corsairs. Before the Euxine had become a "Russian lake," their long galleys, impelled by oar or sail, and with crews of from one hundred to three hundred men, ventured along all the shores of Anatolia, the Crimea, and European Turkey. Many also took service or became slaves in Egypt, where they were numerously represented amongst the

Mamelukes, and where not a few celebrities were natives of some upland Abkhasian valley. Like the Cherkesses, they formed warlike confederacies with their princes, nobles, and freemen, leaving to slaves the hardships of field operations. Some were still unacquainted with money before the Russian rule, exchanges being usually effected by a cow, whose calves represented the interest. It thus sometimes happened that after a few years a small loan had to be repaid by a whole herd. But in 1867 this primitive mode of usury was replaced by that which is in vogue amongst "civilised" nations. Like the Cherkessians also, they were still pagans in thought, while retaining the traces of the old Christian worship in their Moslem creed. Thus they respected churches and the cross, eat pork, and brought to their temples votive offerings of arms, coats of mail, or garments. Even now a chapel, traditionally supposed to have been built by St. Paul on an offshoot of the Marukh, is one of their chief places of pilgrimage. But the most revered temple was still the forest, where they loved to pronounce their solemn vows, and suspend their offerings on the branches of the sacred oak. Here were also formerly placed the coffins of their dead, in the belief that the gaseous explosions would cause the demons to respect their repose. They pay extreme devotion to the departed, and their burial-places are far better cared for than the dwellings of the living.

Fig. 25.—Abkhasian Type.



Several thousand Abkhasians still occupy the upper valleys of the Southern Caucasus, whereas the Adigheh have ceased to exist as a distinct nationality on the opposite slopes. Here the Kara-chai alone have succeeded in hitherto resisting the advancing Muscovite element. Elsewhere the Russians are encroaching incessantly on the domain of the now subdued highlanders. The natives of the Caucasus formerly looked towards the south as the source of civilisation, and they received mainly from Georgia their arms, costly stuffs, and letters. Now they are fain to turn towards the north, whence come the ukases, the armies, and the colonists destined one day to absorb them. Great Russians, Little Russians, Cossacks of both branches, take part in this migratory movement, to which the Government has imparted a distinctly military character by organizing the settlers in companies, battalions, and regiments. All Western Caucasia may be said to be already Russian. Bohemian colonists also, who have received allotments in Circassia, are gradually amalgamating with the conquering race, and the number of Slav immigrants in the Adigheh territory has already long surpassed that of the natives.

The plains of the Lower Kuban and Taman peninsula have been more subject than most regions to successive changes of population, unaccompanied by any appreciable mingling of races. The affinities can no longer be determined of the builders of the dolmens scattered over the peninsula and neighbouring lands, but elsewhere unknown in Caucasia. These dolmens are distinguished from those of other countries by the circular opening in the anterior slab, large enough to allow of a child's head being passed through. The history of the Kuban valley does not embrace these monuments of the age of iron, for it reaches back scarcely more than ten centuries, to a time when this region was occupied by the Khazars and Polovtzi, a remnant of whom were the Kumans, who settled in Hungary. Towards the close of the tenth century the Russian colony of Tmutarakan had already been established in the Taman district, where they had formed relations

Fig. 26.—Cossack Sentinel.

with other Russian settlers in the Crimea. The chronicles describe their struggles with the Yasses and Kosógs, predecessors of the Cherkesses, and an inscribed stone found near Taman, and now in the Hermitage Museum, St. Petersburg, bears witness to the advanced state of civilisation of the early Russian settlers in this region. But they were not numerous enough to hold their ground in the midst of hostile populations, and the country was afterwards occupied by Tatar tribes under Mongol princes. At the beginning of the eighteenth century other Russians made their appearance, not as enemies, but as refugees, in this region. These were the *Nekrasortzi* Cossacks, who preferred the rule of the Crimean Khan to that of Peter the Great, and who were afterwards joined by numerous Raskolniks from various parts of the empire. The country was thus soon repeopled by Russians, who cultivated the soil, established fisheries on the rivers and lagoons, and

introduced the fine Ukranian cattle since propagated in the Transcaucasian provinces. But these industrious settlers, falling under the Czar's displeasure, were compelled to seek refuge first amongst the Cherkesses, and afterwards in Asiatic and European Turkey. Most of them became ultimately absorbed in the surrounding Moslem populations. They were succeeded by some two thousand Nogai Tatar families from the Crimea, who were in their turn removed in mass by the Russian conquerors to the steppes west of the Don.

Henceforth the country formed an integral part of the empire, and was disposed of at the pleasure of Catherine and her all-powerful minister, Potomkin. The unfortunate Lower Dnieper Cossacks, after many vicissitudes, were transferred, in 1793, to the marshy wastes on the right bank of the Kuban. Numbering 17,000 fighting-men, they were at first well received by the Cherkesses, but soon changed from friends to foes and conquerors. The war of conquest was a war of surprises. Redoubts, watch-towers, and fortified stanitzas were established at all strategical points along the Kuban, and to guard against the enemy lurking in its sedgy banks there were formed those formidable *plastûni* which became the terror of the Cherkess outposts in the protracted border warfare. During these conflicts the Cossacks became gradually assimilated in manners, habits, and dress to the highland Caucasians, from whom they could not always be easily distinguished.

Hand in hand with this hostile struggle of some seventy years, the Cossacks maintained another against the outward surrounding, which is still far from concluded. At their arrival towns, villages, canals, highways, everything had disappeared. The process of resettlement also progressed very slowly in steppe lands, partly destitute of, partly covered by water. In the Kuban delta, where fever is endemic, the rate of mortality is very high, in some years often greatly exceeding that of the births. On an average one-third of the children die in the first year, and half the generation has disappeared between the third and fifth years.

Topography.

Here there are no large towns. Emigration has carried off most of the inhabitants, the constant wars have laid waste the lands, the absence of roads prevents the transport of produce to the coast, and the coast itself is still unhealthy, and nearly destitute of sheltered havens. Thus are neutralised the great advantages of a region which is, nevertheless, yet destined to become one of the most flourishing in the Old World. Even *Sukhum-Kaleh,* guarding its southern approach, although chief town of a military district, and notwithstanding its deep and safe harbour, is still an insignificant place. Yet it is supposed to occupy the site of the Hellenic town dedicated by the Milesians, some thirty-two centuries ago, to the Dioscuri, and afterwards known by the name of Sebastopol. The ruins of a Greek city, with its streets, open spaces, and the foundations of its buildings, are still partly visible at a depth of several yards in the Sukhum-Kaleh waters ; the remains of canals, roads, and ancient structures may be traced in the

neighbourhood; and the débris of Greek monuments were utilised by the Turks to rebuild, in 1787, the fortress of Sukhum, after it had been destroyed with the town in 1777. The imports and exports of the place have never in the best years amounted to £40,000; but the dolphin fishery is productive, and in 1872 as many as 3,800 were taken in the harbour alone.

The village of *Pitzunda*, the Pythius of the Byzantines, was also at one time an important town, as is evident from the ruins in the neighbourhood. A Byzantine church restored by the Russians is said to have been built by Justinian in 551. It was to the monastery of this place that the exiled St. Chrysostom withdrew when overtaken by death in 407. It afterwards became the chief Genoese trading station on this coast, and from it most of the Italian traders and missionaries set out, who have left in the Western Caucasus so

Fig. 27.—Valley of the Bzib.
From the Map of the Russian Staff. Scale 1 : 850,000.

15 Miles.

many traces of their presence—churches, watch-towers, coins, arms. Many of the latter, inscribed with Latin or French legends, were still met with down to the middle of the present century in these highlands.

Beyond Pitzunda follow the old forts of Gagri, Adler or Ardiller (Arduvach), and others. Farther on is the deep and well-sheltered roadstead of *Tuapse*, at present a mere hamlet, but destined probably to become the chief trading-place on this seaboard. Meantime, *Novo-Rossiisk*, or Sûjûk, is the first town on the coast near the extremity of the Caucasus. It does a considerable trade, although the roadstead, like the neighbouring Bay of Gelenjik, is exposed to the north-east gales. The old Turkish town of *Anapa* lies on a still more dangerous spot. Thrice taken by the Russians, it was temporarily suppressed in 1860 in favour of *Temrûk*, administrative capital of the Taman peninsula. At that time Temrûk

was a simple Cossack stanitza on a hill 250 feet high, in the centre of the isthmus stretching between two lagoons connected with the Kuban. In its vicinity are the chief mud volcanoes of the Taman peninsula, forming five distinct groups of about a hundred altogether. For some years past the mud has been applied to the treatment of rheumatic complaints. The village of *Taman*, which gives its name to the peninsula, lies near the strait facing Kertch and Yeni-Kaleh, and a little south-west of the fortress of Phanagoria, which stands on the site of the Greek city of that name.

The stanitzas founded by the Cossacks in the districts watered by the Kuban and its tributaries have over the coast villages the advantage of lying at the junctions of the natural routes across the steppes. Several have grown into real towns, although the houses still remain scattered over a large area. In the

Fig. 28.—The Taman Peninsula.

From the Map of the Russian Staff. Scale 1 : 1,100,000.

0 to 16 Feet. 16 to 32 Feet. 32 Feet and upwards.

12 Miles.

province of Kuban alone there are no less than 146, each with upwards of 2,000 inhabitants, a vast number considering the short period since the colonisation began. In 1872 the population of the Kuban territory rose from 672,000 to 733,000, and, as the normal excess of births over deaths was only 6,000 or 7,000, the immigration could not have been less than 54,000. But such a rapid movement, directed without system towards marshy lands, necessarily entails fatal consequences on many of the new arrivals, more especially as the best tracts are already occupied by high officials and members of the imperial family. Between 1860 and 1870 over 325,000 acres were thus disposed of in the province of Kuban and government of Stavropol.

The Cossacks do not distribute the land in separate holdings. "Together we conquered it," they say, "together we have defended it; it belongs to all of us."

The commune decides every year how the several districts are to be cultivated, and market-garden plots alone are held as private property. Still the officers, being no longer elected by their Cossack comrades, have received with their commission parcels of land, or *khutors*, intended to enhance their prestige. The example of the superior officers was soon followed by other dignitaries, and the stanitzas thus became surrounded by khutors, from which the herds of the commonalty were excluded. In 1842 the Government proceeded with the regular distribution of the land according to the rank of the holders—4,090 acres for

Fig. 29.—Valleys of Erosion in the Kuban Basin.
From the Map of the Russian Staff. Scale 1 : 750,000.

12 Miles.

generals, 1,090 for superior officers, 545 for subalterns, 82 for simple Cossacks. The allotments of the soldiers, constituting the communal domain, were thus cut up into small fragments, and the peasantry protested in vain against a distribution so entirely opposed to their interests. Of late years the Shalopûts and other sectarian communities have acquired a great development in this region, the habits of co-operation giving them exceptional strength, and enabling them to succeed where others fail.

The most populous villages are found in the fertile valleys formed by erosion in the limestone terrace facing the Caucasus. The most important of the stanitzas

lying at the very foot of the Caucasian spurs is *Maïkop*, formerly a first-class strategic point, now a chief mart for the produce of the whole country. In the Kuban valley are also the trading towns of *Batalpashinskaya; Nikolayevskaya*, near the Karakent coal mines; *Ladovskaya;* and *Yekaterinodar.* The last named, now capital of the province of Kuban, does a considerable trade, and at its September fairs, frequented by 25,000 of the peasantry, the exchanges amount to about 2,000,000 roubles. *Yeisk*, founded since 1848, has had a rapid development, thanks to its free trade and productive fisheries, and although its progress has been less marked since its privileges have ceased, it still remains the most populous town on the Caucasian seaboard.

Stavropol, capital of the government of like name, stands at an elevation of 2,000 feet on one of the advanced terraces flanking the foot of the Caucasus. Founded as a mere fort in 1776, it long remained without any importance except as a strategical position on the line of the ten fortresses guarding the plains of Ciscaucasia between the Don delta and the town of Mozdok. But thanks to the fertile lands by which it is surrounded, it has now become one of the most flourishing places in Russia. North of it stretch a number of populous villages in the Yegorlik and Sredniy-Yegorlik valleys, founded chiefly by peasantry from the centre of Russia; hence forming not *stanitzas*, but *selos*, a circumstance which explains the difference of terminations presented by the names of villages in the Kuban and Yegorlik basins.

III.—CENTRAL CAUCASUS.

KUMA AND TEREK BASINS.

Between Mounts Elbruz and Kazbek the main range rises for a distance of 108 miles above the snow-line. At certain intervals side ridges, with the summits of the range, form huge masses towering like glittering citadels of ice above the surrounding highlands. The Elbruz, with its counterforts, constitutes the most imposing of these masses in the Caucasus. It is the "Holy Mountain" of the Cherkesses, on whose snowy peak is enthroned the "Lord of the World, King of Spirits." The Adish, Kashtan-tau, and Dikh-tau also form a sort of promontory projecting beyond the main range, and succeeded farther east by a similar group consisting of the Adai-kokh, Tzea-kokh, and neighbouring mountains. Immediately east of this group the chain is broken by the deep gap through which flows the Ar-don; but the gorge is blocked by a ridge running parallel with the main axis, and culminating with Mount Zikari. In the same way the Zilga-kokh stands at the southern entrance of the depression formed by the torrents flowing between the masses culminating respectively with the Tepli and Kazbek. The latter, which is the Mkinvari of the Georgians, and Urs-kokh, or "White Mountain," of the Ossetes, is still more venerated than Mount Elbruz, thanks probably to its position near the gate of the Caucasus, now known as the

Darial Pass. Here is the celebrated grotto, whence the hermits could ascend, by means of an iron chain, to the "Cradle of Bethlehem" and "Abraham's Tent," as the Kazbek peak is variously known to the native Christians.*

River Systems—Kuma Basin.

The counterforts and terraces falling from the snowy crest of the Caucasus form the various chains of the "Black Mountains," beyond which they develop

Fig. 30.—Passanaür, on the Tiflis-Vladikavkaz Route.

into a vast semicircle round the Kabarda plains, terminating northwards with the isolated mass of the Besh-tau. Here the streams converge towards the centre

* Mean height of the Caucasus between the Elbruz (18,820 feet) and Adai-kokh (15,485 feet), 12,670 feet. Chief peaks:—

	Feet.		Feet.
Zikari	10,450	Mamisson Pass	9,540
Zilga-kokh	12,840	Krestovaya Gora	7,542
Tepli	14,000	Besh-tau	4,670

of the amphitheatre, like the Alpine torrents collected in the plains of Piedmont, and thus is formed the Terek, the Po of the Caucasus, flowing thence in a swift and copious stream towards the Caspian. Still the waters descending from the more advanced spurs of the Caucasus do not join the Terek, but drain through the Kalaûs and Kuma north and north-eastwards to the steppes.

The Kalaûs is a true steppe river. With the melting of the snows in spring it overflows its banks far and wide; in summer its stream contracts more and more as it recedes from the hills, and at last runs quite dry before reaching

Fig. 31.—The Elbruz Group.

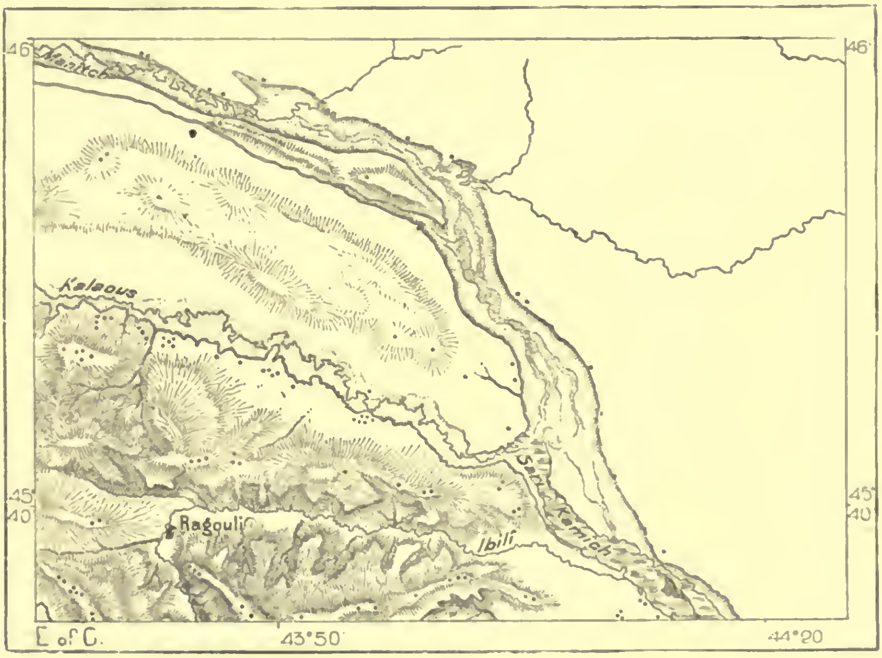
From the Map of the Russian Staff. Scale 1 : 430,000.

9 Miles.

the Manîch depression. It also presents the remarkable phenomenon of a double discharge in the direction of the Euxine and Caspian. Entering the Manîch depression at the water-parting, its floods, arrested and divided into two streams by a small eminence, are diverted west to the Manîch of the Don, east to that which flows to the Kuma delta. Steep banks enclose a bed 2 to 3 miles wide, bearing witness to its former importance. But in this space, large enough to contain the waters of the Nile or Rhone, nothing now flows except a sluggish stream winding its way from marsh to marsh through its sedgy channel.

The Kuma basin is more extensive than that of the Kalaûs, and the streams by which it is watered flow from more elevated ground, some of them from mountains covered with snow for the greater part of the year. On issuing from its upper valley the Kuma is already a copious river; but after receiving its last regular affluent, 150 miles from the Caspian, it gradually contracts as it winds through the steppe. A portion of its waters is evaporated, and the rest is diverted right and left to the pastures of the Nogai Tatars and Kalmuks. It often happens that about 60 miles above its former mouth the last drop is turned aside by the dams of the natives. At one time the quantity of water in the Kuma basin was much greater than at present, and a delta began at the point where the river now

Fig. 32.—Ramification of the Kalaûs.
From the Map of the Russian Staff. Scale 1 : 620,000.



. Kurgans.

12 Miles.

runs dry. The northern branch flowed to the Western Manich, whose bed is now replaced by the lakes and tarns of the Hûidûk, strung together like pearls on a necklace. The two other branches of the Kuma, also indicated by fens, pools, and channels, run nearly parallel towards a bay in the Caspian still known as the Kumskiy Proran, or "Mouth of the Kuma." Exceptionally high floods occasionally sweep away the dams constructed by the Nogai Tatars, and the lower beds are then temporarily flushed, as in 1879, when the yellow waters of the Kuma again reached the Caspian.

Neither the Kuma nor the Kalaûs discharges water sufficient to feed a Ponto-Caspian canal, and even if such a project were carried out, Serebrakovskaya, the

intended port of the Kuma, would be inaccessible to vessels drawing more than 2 feet of water, while those drawing over 4 feet could not approach within 4 miles of the place.

The Terek.

The Terek is not one of those rivers which, like the Manîch and Kuma, run out before reaching the sea. Its chief sources rise in a cirque about 8,300 feet above sea-level, and it is already a large stream before issuing from the region of

Fig. 33.—Delta and Flooded Districts of the Lower Terek.

According to Litvinov. Scale 1 : 1,000,000.

Old Beds of the Terek. Flooded Lands. Kurgans. Bursting of the Dyke. Terek Delta in 1841.

15 Miles.

snows and upland pastures. After skirting the Kazbek group on the south and west, it flows from basin to basin through a series of gorges down to the plains below Vladikavkaz. At the foot of a vast declivity filling the bed of an old lake it collects the waters of the Gusel-don, Fiag-don, Ar-don, and several other rapid streams, beyond which it is joined by the Urukh, and its largest tributary the Malka, with its affluents the Cherek and Baksu. Above the Malka junction it already discharges 17,500 cubic feet per second, and during its further course through the steppe to the Caspian it is joined by the Sunja, another large and

rapid river flowing through the country of the Chechenzes, and fed by numerous sulphur streams. One of these is the Melchihi, which is formed by the junction of five copious springs, so hot that several miles lower down it is still unpotable.

Below the Sunja, notwithstanding the losses caused by evaporation and irrigation, the Terek is still copious enough to form a vast delta, with a large number of permanent or intermittent branches frequently shifting with the floods, and changing their relative importance from century to century. One of these is the "Old Terek," formerly the most abundant, but now surpassed in volume by the "New Terek." The delta comprises a coast-line of about 70 miles, and it seems to have been formerly connected on the one hand with the Kuma, on the other with the Sulak by some now partly obliterated channels. West of the present delta are still to be seen the old shores of the Caspian, as well as a number of parallel lines of elongated sand dunes, or *bugri*, exactly similar to those of the Volga delta, and doubtless formed by the subsidence of the water at the time when the Caspian became separated from the Euxine. According to Baer the alluvia of the Terek are encroaching on the Caspian even more rapidly than those of the Volga. Several inlets have already been choked up, and fishing stations which in 1825 stood on the coast were, thirty years later on, nearly 10 miles from the sea. The whole coast-line between the Kuma and Terek has advanced from 1,000 to 2,000 yards since 1841; but all these new and badly drained tracts are still very unhealthy. During the months of July and August the labourers and gardeners complain of swollen heads, and the marsh fever subjects them to hallucinations of all sorts.

Fig. 34.—The Terek Floods of 1863.
From the Map of the Russian Staff. Scale 1 : 650,000.

Old Beds of the Terek. Kurgans.
12 Miles.

The stream of the Terek is amply sufficient to contribute its share towards the navigable canal with which Danilov proposes to connect the Euxine and Caspian. But pending this somewhat remote contingency, its waters and those of its tribu-

taries are utilised in irrigating the bordering steppe lands. The Eristov Canal, fed by the Malka, traverses the northern plains, joining the Terek after a course of 140 miles. Farther north the Kurskiy Canal, also flowing from the Malka, turns the wheels of nineteen mills, and during the floods forms a stream 96 miles long. A third, running north of the Sunja junction, irrigates over 250,000 acres. If skilfully utilised, the waters of this river system, which abound in fertilising matter, might extend far north and north-east the rich Kabarda basin, which promises one day to become a magnificent agricultural region.

Inhabitants—The Kabards.

The Kabards, or Kabardins, who call themselves Kabertaï, occupy nearly all the northern slope of the Central Caucasus between the Elbruz and Kazbek. They are ethnically closely related to the Cherkesses; like them, a fine race, fonder of wars and strife than of peaceful habits, and distinguished from them only by their harsh speech full of gutturals and sibilants. Their princes claim Arab descent, though the difference which some observers have detected between them and their subjects is probably due to outward circumstances and their occasional alliances with foreign families. The Kabards seem to have come originally from the north-west, probably even from the Crimea, whence they have been gradually driven towards the Terek, first by the Nogai Tatars, and afterwards by the Russians. They have retained something of their former nomad life, and are even now far more devoted to the breeding of horses and sheep than to agriculture. The land is still held in common, the woods and pastures remain undivided, and no one has any claim except to the plot tilled by himself. Such plots, when left uncultivated, revert immediately to the commune. Perhaps more than elsewhere in Caucasia daring robbery is held in honour, but on the condition of its being committed away from the village and tribe, and provided that the robber escape detection. In the latter case he would be exposed to the taunts and jeers of the community. Notwithstanding the Russian laws, it is also still considered highly honourable for the young man to carry off his bride. Some days before the nuptials he steals into the chamber where she awaits him, and whence they escape together. On returning to sue for pardon, he may calculate beforehand on the approval of all who still respect the old usages.

The Kabards properly so called number about 32,000. At one time they were the leading nation in Ciscaucasia; but owing to their exposed geographical position, they were the first to lose their independence. The Russians easily penetrated through the Terek valley into the heart of their domain. Forts erected at intervals along the river divided the plains into two distinct regions—Great Kabarda on the west, and Little Kabarda on the east. Between the two runs the great military route over the Caucasus, and here the Russians consequently strove, in the first instance, to establish their power on a solid footing. As early as 1763 some of the Kabards, outwardly Christians, withdrew to Russian territory, settling in the steppe along the middle course of the Terek. At the beginning

of the present century upwards of 40,000, flying from Russian rule, sought a refuge amongst the Kuban Tatars, who welcomed and gave them lands, which are still held by the descendants of those "White Kabards" But the bulk of the nation remained in the Upper Terek basin, and their young men were fain to accept service in the imperial armies. Amongst them were first recruited those magnificent "Cherkesses," as they are called, who figure so conspicuously on all state occasions. Returning to their homes, they have ceased to be Kabards, and take pride not in their ancestral freedom, but in their present thraldom. The ancient usages also become slowly modified by constant intercourse with the ruling race, while their national unity is broken by the intrusion of foreign elements. Isolated villages are already occupied by Tatars, Uruspievtzes, Balkars, Nogais, grouped in democratic communities administered by the elders. The country is also traversed by Jewish usurers in search of fresh victims, while groups of Germans are settled here and there, generally on the more fertile lands. The "Scotch" colony north of Patigorsk has even been already completely assimilated to these Teutonic settlers. On the other hand, the towns, growing daily in size, have become exclusively Russian, and the district north of the Malka has been entirely Slavonised by the Cossacks, who began to make their appearance in this region during the reign of Ivan the Terrible.

The Osses and Nogai Tatars.

The Osses, more commonly but less correctly known as Ossetes, are as numerous in the Terek basin as the Kabards, but they have scarcely yet ventured on the plains, confining themselves mainly to the upland valleys between Mounts Adai-kokh and Kazbek, west and east. Two-fifths, however, of this nation dwell not on the northern, but on the southern slopes, in the valleys draining to the Rion and Kura, and even on a portion of the Trialetes Hills, south of the Kura plains. They are estimated at upwards of 110,000 altogether, thus forming one of the most important nations in Caucasia. But their fame is due not so much to their power as to the various theories that have been broached touching their origin and affinities. Some have regarded them as Alans; others as the purest representatives of the Aryans in the Caucasus, akin either to the Teutons or to the Iranians; while Vivien de Saint-Martin suggests that they may belong to the race of the Asés, like those who migrated to Scandinavia. Lastly, Pfaff thinks that they are at least partly of Semite stock. But, judging from the great variety of types and features, ranging from the ideal beautiful to the downright ugly, they would seem to be a very mixed people, including Georgian, Armenian, Kabard, and other elements. In the Digor district, on the north slope, several noble families are undoubtedly of Tatar origin, whilst others in the southern valley of the Livash-don are of Georgian stock. Apart from numerous exceptions, the bulk of the people are decidedly inferior in physical appearance to the other races of the Caucasus. Their features are generally angular, their forms heavy, and they utterly lack that pleasant expression, that noble air and

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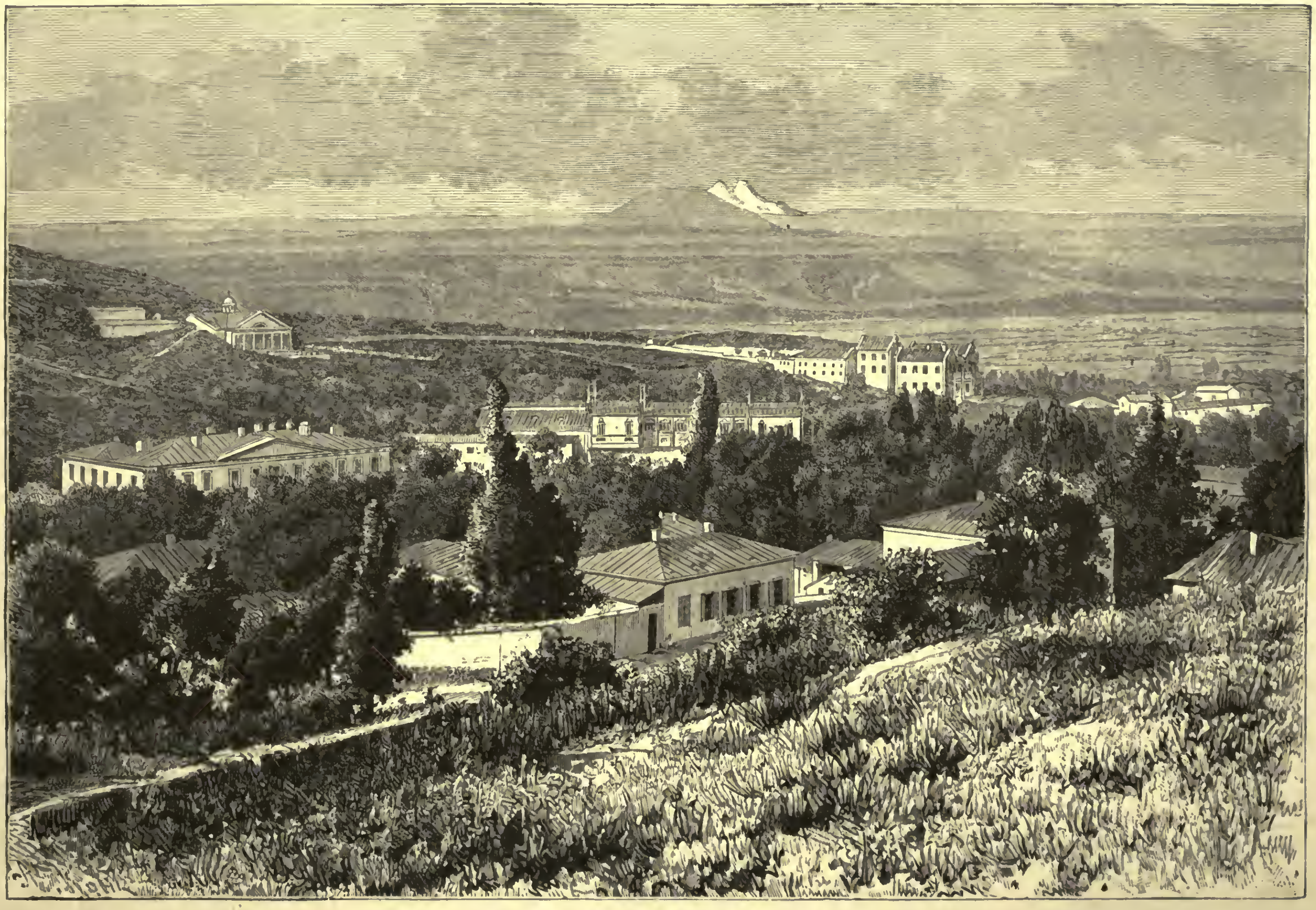
graceful carriage, by which the Cherkesses and Kabards are distinguished. The fair type is more common than the brown, and some are met with blue eyes like the Scandinavians, while others resemble the Jewish dealers in their black or brown eyes, and even in their wheedling voice.

But whatever be their origin, their speech belongs unquestionably to the Aryan family. Their national name is Iron, and their country Ironiston, words suggesting the Iran of Persia. The Digor dialect has a large mixture of Tatar and Cherkess elements, but the pure speech still current in the upland valleys, while ruder than that of the lowlands, abounds in Aryan roots. In their manners and customs the Osses seem also to betray their relationship with the Western nations. They differ from the other Caucasians in their use of the bed, table, and chair; they salute in the European fashion, embracing and shaking hands as in the West; lastly, they brew from barley, and drink their beer from tankards exactly like those of the North German peasantry. In the upper valleys, where wood is scarce, they live in stone towers of great age; but lower down they build little wooden houses like the Alpine barns, shingle-roofed and weighted with heavy stones.

On the whole the Osses do not reflect much credit on the Aryan race. Physically inferior to their highland neighbours, they cannot compare with them in pride, dignity, or courage, although Freshfield calls them the "Gentlemen of the Caucasus." Like their neighbours, they have always been ready to offer themselves to the highest bidder, taking service under the Byzantines, Greeks, or Persians, and returning to their homes to spend in revelry the fruits of their plundering expeditions. They had been so debased by this mercenary trade that they became confirmed marauders, worshipping Saûbareg, god of brigandage, who rides a black horse, accompanying and guiding the freebooters on their predatory incursions. But though still ready for murder and pillage when no danger is run, they took care not to defend their liberty against the Russians at the risk of their lives. Although masters of the central valleys, and consequently of the most important strategical points in the Caucasus, they left the Cherkesses in the west and the Lezghians of Daghestan to fight and perish separately. Instead of occupying the foremost rank in the wars against the aggressor, they waited till victory had decided in favour of the Russians to make up their minds. Poverty had made them the prey of every foreign speculator, and to put an end to all further disputes touching the ownership of the land, the Russian Government declared all the lowlands State property, and removed thither the "unsafe" hillmen. Most of the Osses used to call themselves Mohammedans, but now they pretend to be Christians, and revere St. Nicholas no less devoutly than the prophet Elias. Besides, they had already changed their religion three times during the ten last centuries, and in spite of their present Christianity they practise polygamy, aggravated by the fact that the first wife treats the children of the others as slaves. Pagan practices even reappear beneath the official religion and the remains of the Moslem creed. During Holy Week they make offerings of bread-and-butter on the altars of the sacred



PATIGORSK—VIEW TAKEN FROM THE MASHUKA SLOPES.

groves, in the grottoes, in the former Christian shrines, and then devour the sheep victims of the sacrifice. Their most revered monuments are the *sappads*, or ancient graves, octagonal structures from 12 to 16 feet high, terminating in a pyramidal roof pierced with holes. In some Oss and Cherkess villages the sappads are numerous enough to form veritable cemeteries; but since the middle of the century no new ones have been allowed to be built, because of the gases escaping from them and poisoning the atmosphere.

Of the non-Caucasian peoples the most numerous in the Kuma and Terek basins are the Nogai Tatars, who roam mostly over the eastern steppes, and along the shores of the Caspian and brackish lakes filled by the winter rains, dried up under the summer suns and winds. Akin to those still met here and there on the banks of the Kuban, and partly descended from the old masters of the Crimea, the Nogais are true Asiatics. Like their poor neighbours the Stavropol and Astrakhan Kalmuks, they dwell in felt tents, and when removing to fresh pastures they place their children in the panniers carried by the camels on whose hump the women are perched, and in this order the caravan crosses the desert wastes. Thus are the familiar scenes of Central Asia repeated on the western shores of the Caspian, though this Asiatic region is being gradually contracted, according as the Mongoloid populations are being driven back by the Russians. During the last fifty years the Nogais of the Caucasus have fallen from 70,000 to half that number. In features, stature, and carriage most of them have become Mongolians, assuming by mixture the flat face, broad nose, prominent cheek bones, small and oblique eyes, high brow, and scant beard of the Kalmuks. They are of a gentle and kindly disposition, but wedded to their old usages, haters of all change, and resisting Slav influences except along the river banks, where tillage and the fisheries bring them into constant contact with the Russians, and where poverty obliges them to hire themselves out to the Armenians and Cossacks. With the sad temperament of all Mongolians, they derive their national name, with a sort of melancholy irony, from a word meaning "Thou shalt be wretched."

Some thousands of Turkomans also live in the neighbourhood of Kizlar. According to a tradition, based apparently on a faint reminiscence of submarine geology, these Turkomans crossed over on dry land from the Krasnovodsk headland to the peninsula of Apsheron.

Topography.

Patigorsk (in Russian "Five Hills"), the largest town in the Kuma basin, lies at the southern foot of the Mashuka, an advanced spur of the Besh-tau group. This five-crested porphyry cone rising in the middle of the plain was at all times a rallying-point for the steppe nomads. Hence Patigorsk occupies one of the spots in the Caucasus most frequented by divers tribes, Kabards, Nogais, Cossacks, and others, and it has now become a rendezvous for the Russians of all the surrounding provinces, and even for strangers from the rest of Europe. Patigorsk is, in fact, one of the thermal stations whose abundant sulphur springs are held in

the highest repute, and is more frequented than all the rest of the hundred watering-places in Caucasia, with their seven hundred different mineral springs, as enumerated by Chodzko. Within a radius of 24 miles the Patigorsk medicinal waters comprise a complete series of such as are recommended by modern therapeutics. The twenty springs in Patigorsk itself, with a temperature varying from 85° to 110° Fahr., and yielding on the average 2½ gallons per second, are typical sulphur springs. About 12 miles to the north-east the station of *Jelesnovodsk*—that is, "Iron Water"—indicates by its very name the nature of its twenty springs, which

Fig. 35.—Patigorsk and the Region of Thermal Waters.
From the Map of the Russian Staff. Scale 1 : 600,000.

12 Miles.

differ greatly in temperature and the amount of their carbonic acid, while varying in the quantity of their discharge, which is affected by the earthquakes. Near the village of Yesentuki, west of Patigorsk, there are also twenty springs, but cold, alkaline, and containing iodine and bromine. In the hills to the south-west occurs the magnificent spring known to the Cherkesses as the *Narzan*, or "Drink of Heroes," and now distinguished by the less poetic but more accurate name Kislovodsk, or "Acidulated Water." This spring, whose properties are unrivalled, yields over 375,000 gallons of water, and liberates 190,000 cubic feet of carbonic acid daily. The approach to the sacred spring was formerly defended by a wall

several miles long, flanked by grottoes and by tombs, the traces of which are still visible. Other sources that have not yet been utilised contain chlorine, magnesia, marine salt, while the lakes and pools left in the steppes after the subsidence of the sea have their saline muds filled with microscopic algæ, like the limans of the Euxine.

Patigorsk covers a large space in the valley of the Podkumok, a southern affluent of the Kuma. It stands at a mean altitude of 1,580 feet above the unhealthy atmosphere of the plains, and its climate is further improved by extensive promenades, parks, and gardens. Fine hotels, houses, arcades, and elegant shops well stocked with Russian, English, French, and Oriental wares, give it the aspect of a European watering-place, though dating only from the year 1830. At the end of the last century invalids came to take the waters "under the fire of the Cherkesses." The Russian lords arrived with retinues of some hundred cavaliers and retainers, long lines of equipages, tents, and supplies, during the treatment encamping in the neighbourhood of the spring.

Georgyevsk, north-east of Patigorsk and in the same river basin, was the capital of Ciscaucasia till 1824. When the administration was removed to Stavropol, it fell to the rank of a simple village, but has since recovered its importance as the agricultural centre of the Kuma basin, and as a station of the Caucasian railway. Its prosperity has also been promoted by some German colonies in the neighbourhood. Farther down, on the Kuma and its western affluents, there are merely a few Cossack stanitzas, some of which, such as *Otkaznoïe*, *Alexandrovskaya*, *Blagodarnoïe*, *Praskoveya*, have become towns and important agricultural centres. East of Praskoveya formerly stood the famous city of *Majar*, or Majari, on both banks of the Kuma. The coincidence of names has induced some writers to suppose that Majar was a capital of the Hungarian Magyars. But the word, which is of Tûrki origin, meaning "palace," "edifice," seems to have been the name of one of the four chief cities of the Khazar Empire. The Kipchak Tatars were settled here, and various recently discovered documents show that it was still a flourishing place in the fourteenth century, much frequented by Russian traders. In the time of Pallas there were still standing thirty-two buildings in good repair; now there is nothing to be seen but the remains of towers and heaps of rubbish covering a vast space. The few inscriptions that occur refer all of them to the Moslem Tatars, and the medals that have been dug up had all been struck at Saraï, on the Volga. Numerous kurgans are scattered about, and the Armenian village of Svatoi-Krest has sprung up in the midst of the ruins.

The capital of Kabarda and the chief place in the Terek basin is *Vladikavkaz*, known to the Osses as Kapkaï, or "Gate of the Hills." It lies, in fact, at the foot of the Black Mountains, guarding the entrance to the deep gorges through which the Terek escapes. Standing about 2,300 feet above sea-level at a point commanding the military route through Central Caucasia, it enjoyed paramount strategical importance during all the wars of the Caucasus, and since the reduction of the hillmen it has become a large commercial emporium. Yet the military

and official elements are still predominant, and in 1874 the male was more than double the female population.

Till recently the military route from Vladikavkaz across the Caucasus to Tiflis was exposed to destruction from the angry waters of the Terek, while avalanches of snow and detritus swept over it at the issues of the mountain torrents. Even now it is constantly threatened to be overwhelmed by the Devdoraki glacier, and is generally blocked for seventeen days in the year for a space of 8 or 9 miles. Hence heavy engineering works will have to be carried out, should the project be persisted in of running a line of railway through the Terek valley and under the Caucasus from Vladikavkaz to Tiflis. The prosperity of Vladikavkaz and other towns on both slopes of the main range largely depends on the ultimate choice that may be made of the several alternative lines that have been proposed. It is probable, however, that, before attacking it directly, the main range will be skirted at its eastern extremity by a line connecting the towns of Petrovsk, Derbent, and Baku.

Fig. 36.—The Vladikavkaz-Ananur Route through the Terek Valley.

From the Map of the Russian Staff. Scale 1 : 640.000.

6 Miles.

Yekaterinograd, on the Terek below Vladikavkaz, a former outpost of the Cherkesses, still occupies a vital position near the confluence of the Malka. Here Potemkin founded one of the chain of Russian fortresses in the Caucasus, and seven years later on it was chosen as the capital of the Muscovite possessions in this region. But it lost this position in 1790, since when it has remained a simple Cossack stanitza. The political and commercial centre of the district is *Mozdok*, or "Black Wood," founded in 1759 by a chief of Little Kabarda driven by the fortunes of war into exile. From the first it was a haven of refuge for fugitive Kabards, Osses, Chechenzes, Armenians, and Georgians from Transcaucasia. Till recently the Armenians formed by far the most numerous element, and thanks to them Mozdok had become the chief trading-place in Ciscaucasia. The Russian Government had even favoured it by diverting towards it the military route between Stavropol and Tiflis; but since the completion of the railway it has lost

the advantages thereby acquired. Henceforth its prosperity must depend exclusively on its position as the natural rallying-point of the surrounding populations, and as the entrepôt of the agricultural settlements on the Middle Terek.

Grozniy, which has grown up round the fortress of Groznaya, is now the

Fig. 37.—The Tebulos-mta Group.

From the Map of the Russian Staff. Scale 1 : 255,000.

6 Miles.

natural capital of all the Sunja valley, probably the most fertile in Ciscaucasia. Its mineral waters, known since the middle of the last century, are much frequented, but the neighbouring naphtha wells have no great commercial value.

Of the numerous towns and villages scattered over the Grozniy plain and surrounding hills the most important are *Urus-Martan*, and farther east the Moslem town of *Ak-sai*, in a well-watered district laid out in gardens.

Kizlar, of which mention occurs so early as 1616, was also a place of refuge for fugitives, especially Armenians, who gradually monopolized the local trade. It is happily situated at the head of the Terek delta for traffic and horticulture, the river and its branches supplying all the water needed for irrigating purposes. In 1861 there were in this district over 1,250 flourishing gardens, supplying the Russian markets with all sorts of spring fruits and vegetables. Kizlar is likewise noted for its vineyards, the produce of which, exported from the neighbouring port of Briansk, or Brianskoïe, is used by the Russians in the manufacture of "port," "sherry," "madeira," and other famous southern wines. About 1,250,000 gallons are yearly sold at the Nijni-Novgorod fair.

IV.—EASTERN CAUCASIA.

DAGHESTAN.

ALTHOUGH boasting of no summits rivalling Mounts Elbruz and Kazbek, the general relief of the eastern is far more considerable than that of the central section of the Caucasus. The depressions between the peaks are relatively very high, while the lateral ridges give to this division an expansion of 2° of latitude north and south. Here the different altitudes and dispositions of the groups impart far greater variety to the scene, and in many valleys snowy or wooded heights rise all along the line of the horizon. The rugged and tangled masses long afforded a shelter to the natives against the Russians, who were unable to penetrate into the upper valleys except through the winding beds of the mountain torrents or across unknown tracks, where they were exposed to the ambuscades and sudden attacks of the lurking foe.

Mount Borbalo, source of the streams flowing to the Terek, Sulak, Kuma, and Alazan, is usually regarded as the western limit of Daghestan. Here the Andi, or principal side ridge, branches from the main range, forming with it the triangular space of the Eastern Caucasus. This region presents somewhat the aspect of a vast plateau scooped into valleys, the higher of which nowhere fall more than about 3,000 feet below the surrounding crests. Abish regards the whole of Daghestan as a system of sedimentary, Jurassic, cretaceous, and tertiary rocks overlapping each other, and whose folds have been rent and intersected by crevasses. The culminating point of this system is the Tebulos-mta, rising to a height of 14,990 feet in the Andi ridge. Several other *mta*, or "peaks," in the same chain exceed 13,000 feet, whereas those of the central range vary from 9,750 to about 11,370 feet. Still the line of perpetual snow is reached by several, such as the Sari-dagh, Vitzîri, Bazardiûz, Tkhfan-dagh, Baba-dagh, on the main range, and the Alakhûn-dagh, Shalbûz-dagh, Shah-dagh, or Eastern Elbruz, and Kizil-Kaya, in the northern side ridges. East of the Baba-dagh the mountains

fall rapidly towards the Caspian, sinking to mere hills in the Apsheron peninsula. Nearly all these mountains are still known by their Tûrki or Georgian names.*

River Systems.

A few of the torrents rising in the advanced spurs of Daghestan flow to the Sunja, the chief southern affluent of the Terek; but most of these waters are collected by the Sulak, formed by the four torrents which bear the Tatar name of Koï-su. Like the Terek and Ar-don, the Sulak emerges through magnificent gorges on the plains, trending thence eastward to the Caspian. Like them, also, it is gradually encroaching on the sea, and during the floods forms a temporary delta, whose waters are partly mingled with those of the Terek in the vast Bay of Agrakhan, which is rather a lagoon than a marine inlet. In the hope of deepening its channel, Peter the Great diverted to it a permanent stream from the Sulak, but, like so many similar projects undertaken by that czar, the attempt proved abortive: the dykes were swept away by the floods, and the navigable canal choked by the mud. More successful have been the irrigation rills formed some years ago, and bringing under cultivation 150,000 acres about the Lower Sulak.

Of the streams flowing to the Caspian south of the Sulak, the Samur alone assumes the proportion of a river. On emerging from the mountains it ramifies into several branches, which are continually shifting their beds in the midst of the sands and shingle. The Samur, and all the torrents traversing the Kuba district, may be said to form a common delta, intermingling their waters, and jointly encroaching on the Caspian. Like the *fiumi* and *fiumare* of the eastern slopes of the Apennines, these streams are constantly changing their beds, leaving here and there old channels, false rivers, and stagnant pools no longer traversed by running waters. Hence the Lower Samur district, whose hydrographic system is not yet fully developed, is one of the most unhealthy in the Caucasus.

Inhabitants—The Chechenzes.

In 1868, at the close of the wars that had laid waste the Caucasian valleys, the Russian Government took a census of the highland population, which was found to number 908,000. In 1872 it was estimated at 995,000, of whom nearly one-half, or about 478,000, were in Daghestan alone. The Chechenzes and Lezghians of the northern slope between Kabarda and the Caspian form at present an aggregate

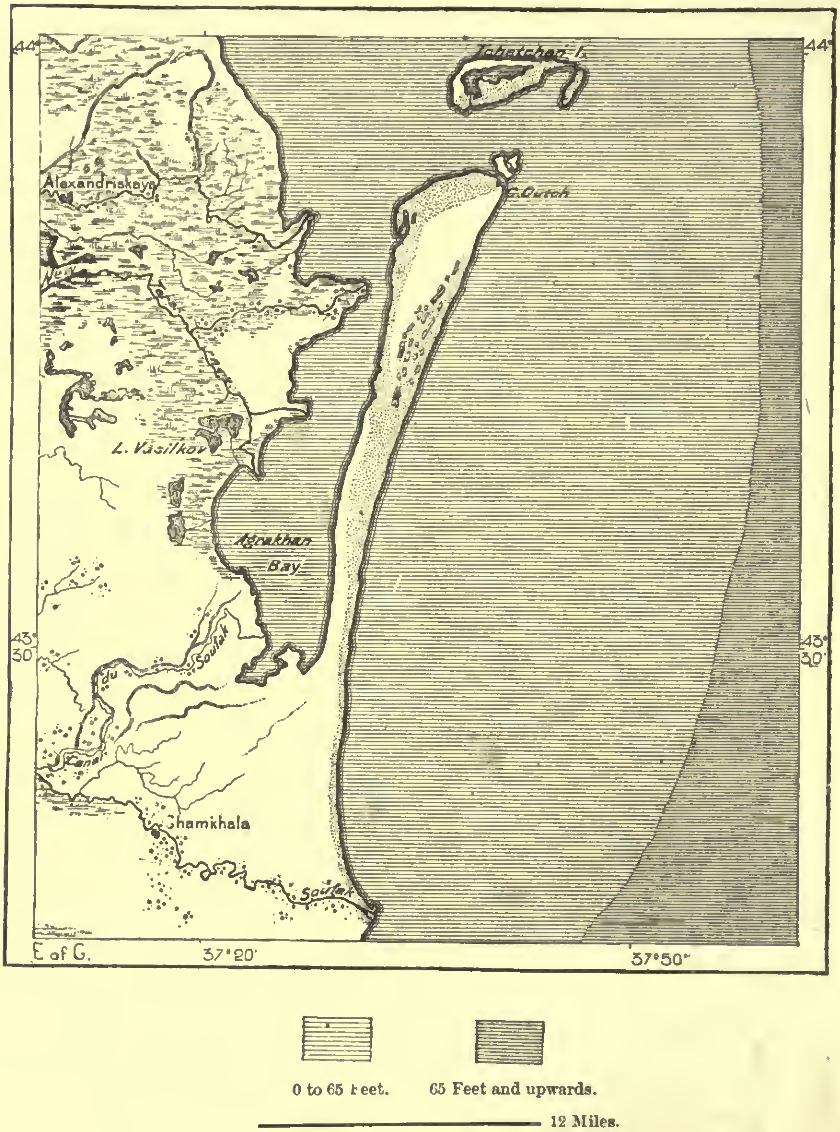
* Chief altitudes of the Eastern Caucasus:—

Main Range.	Feet.	*Andi Ridge.*	Feet.
Borbalo	11,120	Tebulos-mta	14,990
Sari-dagh	12,180	Kachu	14,220
Vitzîri	12,930	Diklos-mta	13,930
Bazardiûz	14,930	*Eastern Highlands.*	
Tkhfan dagh	13,970	Alakhûn-dagh	12,930
Baba-dagh	12,100	Shah-dagh	14,160
Atesh-gah (Apsheron)	910	Shalbûz-dagh	14,150
		Kizil-Kaya	12,420

of at least 670,000 souls. This population is made up of several races differing in origin, religion, manners, and speech, though it is now ascertained that most of the idioms here current are merely varieties of a common stock language. One of them is restricted to the single village of Inukh, consisting of some thirty houses,

Fig. 38.—Mouths of the Terek and Lower Sulak.

From the Map of the Russian Staff. Scale 1 : 720,000.



in South-west Daghestan, and none of them possess any literature except the Avar, which boasts of a few documents written in the Arabic character.

Amongst the peoples of the Eastern Caucasus the Chechens, or Chechenzes, estimated at about 140,000, are divided into some twenty different groups, each with a distinct language. Known to the Lezghians by the name of Misjeghi, and to

the Georgians as Kists, the Chechenzes occupy the whole of West Daghestan, east of the Osses and Kabards, and even descend from the advanced spurs down to the plains. Their territory is traversed by the Sunja, which divides it into "Little Chechniya," the lowland district, and "Great Chechniya," the highland region. Both the lowlanders and the hillmen fought desperately against the Russians in the last century under Daûd Beg and Omar Khan, in the present under Khazi-Mollah and Shamyl. Sunnite Mohammedans of a more fanatical type than the Cherkesses and Abkhasians of the west, they fought with the devotion inspired by religious enthusiasm, combined with a love of freedom and a warlike spirit. Yet

Fig. 39.—The Kuba District.
From the Map of the Russian Staff. Scale 1 : 840,000

they were fain to yield at last, and since 1859 Chechniya, the most fertile and salubrious region in Caucasia, has been completely subdued. In 1819 the fortress of Groznaya, now grown into the city of Grosniy, had been built by the invaders on the banks of the Sunja between the two Chechenz territories, and its "threats," as the name implies, were not in vain. Like the Cherkesses, most of the highland Chechenzes were compelled to forsake their ancestral homes, and those who refused to settle in the plains migrated to Turkish Armenia in convoys of one hundred to two hundred families, escorted by Russian guards. Here fresh misfortunes awaited them. After sanguinary struggles with their new neighbours for the possession of the

land, they were several times removed, and the graveyards of each fresh place of exile retained numbers of the emigrants.

The Chechenzes bear a strong resemblance to the Cherkesses, and, like them, are haughty, well proportioned, active, fond of rich garments, which they wear with an easy grace. Most of them have an aquiline nose, and a restless, almost sinister glance; yet they are generous, and always maintain a certain dignity of speech and carriage: they kill, but never insult. The women of the better classes wear an elegant robe revealing the figure, and wide silken trousers of a pink colour. Yellow sandals, silver bracelets, and a piece of cloth falling over their shoulders and partly concealing the hair, complete their attire. The Chechenz dwellings are nearly all veritable hovels, cold, dank, and gloomy, some dug out of the ground, others formed of interwoven branches, or of stones rudely thrown together. A group of such dwellings forms one of those *aûls* often seen perched on some steep bluff, like erratic boulders arrested on the brink of the precipice. Before the Russian conquest most of the people lived in republican communes, governing themselves by popular gatherings like those of the primitive Swiss Cantons. Other communities were subject to hereditary khans, whose power dated from the time of the Moslem invasion. But all alike obeyed the *adat*, or unwritten code of the common law.

Although much dreaded by the lowlanders as brigands and marauders, the Daghestan hillmen, and especially the Chechenzes, more, perhaps, than any other warlike people, revealed the most brilliant qualities of freemen, at least during the final struggle with the Russians. "We are all equal," they were fond of repeating, and in point of fact there were no slaves amongst them except prisoners of war or their descendants. But these often married the daughters of their masters, and thus became members of the family and the equals of all. The Chechenzes carried their pride to a pitch of fanaticism, but their hospitality was boundless, although associated with eccentric practices. The traveller is often met by a band of horsemen swooping wildly down from the camping ground, firing salvoes over his head, then suddenly stopping within ten or fifteen paces, and saluting him with a profound "Salam aleikum!" In such a society justice was necessarily regulated by the law of life for life, and, notwithstanding the Russian code, this law is still the only one that is respected. Murder, pillage, robbery with violence, can be expiated only by death, unless the offender allow his hair to grow, and the injured party consent to shave it with his own hands, and make him take the oath of brotherhood on the Koran. It also happens that the law of vendetta is at times suspended by some great feasts. When a hillman discovers that his horse has disappeared, he sets out in search of it, fully equipped, wrapped in one of those white woollen shrouds which serve as winding-sheets, and provided with a piece of money to pay the priest who has to utter the prayers for the dead. The robber mostly gets rid of his booty by selling it in some remote clan, but at the sight of the rightful owner armed for a deadly fight the purchaser restores the animal, takes over the shroud and money, and presents himself before the vendor. Should he happen to be the robber, the priest is called in, and they fight it out. But if

the vendor has himself been deceived, he sets out in his turn with the dread emblems of mortal strife, and thus death at last hounds down its quarry, unless the horse-stealer happens to be a stranger from over the hills.

Another custom peculiar to the Ingush tribe illustrates their strong belief in an after-life. When one of the betrothed dies on the wedding-eve, the ceremony is performed all the same, and the dead is joined with the living in a union to be ratified in heaven, the father never failing to pay the stipulated dowry. Christianity still retains a certain hold on the Chechenzes, although all have adopted the Sunnite creed except those of Braguni, on the Sunja. Three churches built on a hill near Kistin in honour of SS. George, Marina, and the Virgin are still much-frequented places of pilgrimage, where rams are offered in sacrifice at certain times. These buildings are choked with animal remains.

The Lezghians, Tats, and Tatars.

Most of the peoples occupying the valleys east of the Chechenzes are grouped under the collective name of Lezghi, or Lezghians. The term has been explained to mean "Brigands," or "Marauders," in Tatar, although it seems more probable to be an old national name, for the Georgians and Armenians have from time immemorial applied the form *Lekhi*, or *Leksik*, to this nation. The number of Lezghian tribes, constantly changing with wars and migrations, is estimated at from fifty to fifty-five, although Komarov, keeping to the main divisions, indicates the domain of twenty-seven tribes only in his ethnological map of Daghestan. All these have distinct dialects marked by guttural sounds extremely difficult of utterance by the European mouth. They have been grouped by Uslar and Schiefner in a number of linguistic divisions, the chief of which are the language of the Avars in West Daghestan, and the Dargo and Kura in the east. Most of the tribes being thus unable to converse together, intercourse is carried on by means of a third language—Arabic usually in the west, and the Tûrki dialect of Azerbeijan in the east. Of all the Lezghian nations the most renowned are the Avars, bordering on the eastern frontier of the Chechenz domain, and comprising over one-fifth of the whole population. Most writers think they may probably be the kinsmen of the Ávars who founded on the Danube a large empire, overthrown by Charlemagne. But according to Komarov Avar is of recent origin, meaning in the Lowland Tûrki "Fugitive," or "Vagrant."

Daghestan has too little arable land to enable its half-million of Lezghian population to live on agriculture and stock-breeding. Yet they are skilled tillers of the land, their walled and well-watered plots supplying good corn, fruits, and vegetables. Still they had to depend on emigration and plunder to make good the deficiency of the local supplies. Settled on both slopes of the Caucasus, they were able to swoop down on the Terek and Sulak plains in the north, or on the fertile southern region of Georgia. No less daring, and even more steadfast than the Chechenzes, they had the disadvantage of being broken up into a great number of free tribes often at feud with each other, while the flower of their youth were

accustomed, like the Swiss and Albanians in former times, to hire themselves out as mercenaries to all the surrounding kinglets. In their warfare they displayed more savagery than the Cherkesses, and, unlike them, carried off as a trophy the right hand of their captives when forced to abandon them.

The Lezghians never fought in concert till during the final struggles against the Russians in defence of their hearths and altars. All are Mohammedans except the Dido of the Upper Koïsu valley in Andi, who have the reputation of being devil worshippers, because they endeavour to conjure the evil one by sacrifices. Although much given to wine-drinking, tobacco smokers, and observers of traditional Christian and pagan rites, the Lezghians are none the less zealous Sunnites, and it was owing to their ardent faith alone that they were able for many years to forget their tribal and family rivalries, and make common cause in the *ghazarat*, or holy war against the infidel. Rallying with the Chechenzes round their fellow-countryman Khazi-Mollah, and afterwards round his ward Shamyl (Samuel), of the Koïsu-bu tribe, they drove the Russians more than once back to the plains, often compelling them to abandon their more advanced military settlements and isolated garrisons in the hills. Their strength lay mainly in the spirit of freedom by which they were inspired, and which was kept alive by the deeds of their legendary hero Haji-Murad, renowned in the wars waged against the khans of the Avars. But when the aristocracy of the *naïbs*, or governors, was gradually restored, the people, becoming enslaved to their chiefs, ceased to struggle with the same vigour against the Russians. Surrounded on three sides by an ever-narrowing iron circle of forts and military columns, and seeing their territory cut up by great military routes, they were fain to yield after half their numbers had perished from disease, hunger, and the sword. When Shamyl surrendered in 1859 his followers had dwindled to about four hundred armed men.

Fig. 40.—Nogai Youth.

After the conquest the old family jealousies revived, and the Lezghian districts are now the chief scene of sanguinary strife and murder. About one in every three hundred of the population is either killed or wounded during the year, and the circle of Kaïtago-Tabasseran, west of Derbent, has the melancholy distinction of harbouring more assassins than any other district in the empire. Yet in their neighbourhood dwell the peaceful Ukhbukanes, or Kubichi, who are chiefly

engaged in forging arms for the surrounding hillmen. Indispensable to all, their neutrality is alike respected by all. This industrious tribe claims European descent, but their national name of Frenghi, or Frenki—that is, Franks—is justified neither by their features nor their speech, which is a Dargo dialect. In any case they are a very small community, consisting in 1867 of scarcely 2,000, dwelling in 400 houses. Some of the *magal*, or tribal confederacies, acquired a considerable degree of prosperity, thanks to their common solidarity and individual freedom.

Fig. 41.—Mount Gûnib.

Such was that of the five Dargo clans, whose popular gatherings, which resembled the Swiss *landsgemeinden*, were held in a plain near Akhusha. This magal received refugees from all nations, and their territory was the most densely peopled in all Daghestan.

The Caspian seaboard, forming the historical highway of migration and conquest between Europe and Asia, was naturally occupied by a motley population, in which were represented all the races who had made use of this military and commercial route.

Hence Mongolians, Semites, Aryans, and Tatars are now found crowded together in this narrow strip of coast. The Nogai Tatars have fixed their tents in the northern steppe bordered by the Sulak. The tract stretching thence to Derbent is occupied chiefly by the Kumîk Tatars, numbering over 50,000, and many Armenian traders. Other Tatars, akin to those of Transcaucasia, dwell farther south in the Kuba district. The *lingua franca* of all these races is the Tûrki dialect of Azerbeijan, although the Persians, Tats, or Tajiks, about Derbent and between Kuba and the Gulf of Baku, still preserve their language and usages since the time of the Sassanides, when they settled here. With them evidently came the Jews, who also speak Persian, while their women wear the Iranian garb. But their Persian dialect is mixed with many old Hebrew and Chaldean terms, and according to some authorities those of Kuba, Baku, and Shemakha are descended from the Israelites, who were removed to Persia after the first destruction of the Temple by Salmanazar over two thousand five hundred years ago. The names of their children are those in vogue during the time of the judges, and which have elsewhere been obsolete for the last twenty-five centuries. Most of the Caucasian Jews, however, have become much mingled with, and even absorbed by, the Osses, Georgians, and especially the Tatars, and many villages known by the name of Jût-kend, or "Jewish Town," are now exclusively occupied by communities claiming to be of Tatar stock.

Topography.

In the highland districts there are no towns, though the Lezghian aûls have often been crowded by thousands attracted by local festivities, or rallying round their warrior chiefs. *Khunzak*, formerly capital of the Avar Khans, is now a mere ruin, on a bluff commanding a tributary of the Koïsu, and itself commanded by the guns of a Russian fort. *Ghimri*, above the junction of the two rivers Koïsu, retains nothing but a reminiscence of the national wars, for here died Khazi-Mollah, and here Shamyl was born. *Vedeno*, on a lofty terrace within the Chechniya territory, is an important village overlooked by a Russian fort, which stands on the site of Shamyl's former citadel. Near it is Mount Gûnib, whose upper terrace, 40 square miles in extent, served as the last refuge of the Lezghian prophet and prince.

Temir-Khan-Shura, in the Kumîk Tatar country, stands at an elevation of 1,540 feet in a valley opening towards the Caspian. The lake, or tarn, whence its name, is now drained, although fever is here still endemic. The port of all this district is *Petrovsk*, during the wars a place of some strategic importance, and with one of the best harbours on the Caspian, sheltered from the west and south winds, and affording good anchorage in 20 feet of water within 800 yards of the shore. Though of recent origin, Petrovsk has already supplanted its southern rival, *Tarki*, or Tarku, which, with a Tatar population of nearly 12,000 at the beginning of the century, is now a mere village dependent on Temir-Khan-Shura.

The narrow defile between the advanced spurs of the Tabasseran range and the coast is guarded by the city of *Derbent*, or Derbend, traditionally founded

either by the Medes or by Alexander the Great, but more probably by one of the Sassanides about the close of the fifth century. This unique town and fortress is enclosed between two long parallel walls running from the hills to the sea, flanked by towers and inscribed sepulchral stones. Within this inclined parallelogram the houses and bazaar form in reality but one line of buildings somewhat under 2 miles long. As implied by its Persian name, Derbent is merely a large fortified gateway, whence also its various Tatar and Arabic names. All the mediæval travellers describe its walls as advancing far into the sea; but nothing is now visible of this marine rampart, which may be due to a local upheaval. Between

Fig. 42.—Derbent.

Scale 1 : 200,000.

Traces of Old Wall, according to Eichwald.

3 Miles.

the town and the present coast-line there stretches a broad strip of land which was formerly perhaps under water. West of Narîn-Kaleh, the citadel commanding it on the west, the wall, here also flanked with towers, follows the crest of the hills in the direction of some distant peak. According to the natives this wall formerly crossed the whole range from sea to sea, and in any case it guarded all the lowlands at the foot of the Eastern Caucasus, for traces of it are still met at a distance of 18 miles from Derbent. There are few more industrious places in Russia than this Persian town, although its population is said to have fallen from 26,000 in 1825 to little over half that number in 1873. In the district are 1,500 well-watered garden plots, yielding wine, saffron, cotton, tobacco, madder,

and fruits of all kinds. Some naphtha wells and quarries of bituminous schists are worked in the neighbourhood.

Less picturesquely situated than Derbent, *Kuba* resembles it in its population and pursuits, its inhabitants consisting chiefly of Mohammedans of the Shiah sect engaged in gardening, and of some thousand Jews occupied with trade. The climate is so unhealthy that an attempt was made in 1825 to remove the town to a more salubrious site some 10 miles farther north-west. But the people refused to follow the Russian officials, who were fain to return to the old town, where, however, they reside only in winter.

In the Samur valley the chief town is *Akhti*, standing at the junction of two torrents in the heart of the mountains.

V.—THE INGÛR, RION, AND CHORUKH BASINS.

MINGRELIA, IMERITIA, SVANIA, LAZISTAN.

This Transcaucasian region, recently enlarged by a slice of territory from Turkey, has long been politically attached to Europe. The Greeks had thrown a hundred and twenty bridges over the Phasis, and constructed a fine carriage road across the mountains between the town of Sarapanes, the present Sharopan, and the Kura valley. To the Greeks and Romans succeeded the Genoese, and even when the Turks seized the seaboard they did so as masters of Constantinople and heirs of the Byzantine emperors. European influence has also made itself felt in religious matters, most of the inhabitants having been Christians since the first centuries of the Church, whereas the two great divisions of the Moslem faith have prevailed elsewhere in Caucasia. Nevertheless the Ingûr and Rion basins have long kept aloof from the general movement of modern culture, and some districts are still in a barbarous state.

This region, the Colchis of the ancients, is equalled by few places for the splendour of its vegetation, its natural fertility and resources of every sort. Yet it is but scantily peopled, with scarcely one-half of the relative population of France. The Ingûr and Rion basins are both of them sharply limited by the Caucasus, Anti-Caucasus, and intermediate Mesk range. From Abkhasia to Lazistan the hills form a complete semicircle, whose lowest point, except near the coast, is at the Suram depression, 3,040 feet above sea-level. This vast semicircle is divided by ridges running parallel with the Great Caucasus into secondary segments, some of which are completely isolated, and form little worlds apart.

The Upper Ingûr valley, which has become administratively the district of Free Svania, forms one of these distinct regions, and is typical of those elongated troughs lying between two parallel crests at an altitude of about 6,300 feet, and skirted north and south by snowy ridges. Here the glaciers of the Truiber have carried their advanced moraines to within 2 miles of the Svan village of Jabeshi, in the commune of Mujal, and the village itself, like so many others, is built on

the detritus of moraines deposited by the old glaciers. The glacial torrents forming the Ingûr are collected in the depression of Free Svania, which is enclosed by a transverse barrier running south of Mount Elbruz. Hence the Ingûr escapes from its upper valley through a narrow and deep rocky defile, in which it flows south-west and south for a distance of 48 miles. From 15 to 30 feet broad, and commanded by granitic or schist escarpments 600 to 1,200 feet high, this gorge presents, nevertheless, a succession of smiling landscapes, thanks to the bushy vegetation of the river banks and to the little mounds of rocky débris at the mouths of the tributary streamlets. Previous to the military expedition of

Fig. 43.—Mouth of the Rion.

Scale 1 : 400,000.

6 Miles.

1858 no route had penetrated through this gorge, and Svania communicated with the Mingrelian plains only by a dangerous mountain path.

The gorges of the Rion and its head-streams lack the sublimity of those of the Ingûr, although all of them present some delightful views. The Rion and Tskhenis, the two chief rivers of this basin, both rise amidst the snows of the Pasis-mta, a word almost identical with that of Phasis, given by the Greeks to the river now known by the Georgian name of Rion, or Rioni. Separated at their source by the Garibolo ridge, the two streams diverge more and more, the Tskhenis watering the Svania of the Dadians and Mingrelia, while the Rion flows through Radsha and Imeritia. From the eastern valleys comes the Kvirila, which,

after joining the Khani from the south, united with the Rion in the fertile plain stretching south of Kutaïs. Here begins the old inlet, which has been gradually filled in by the alluvia of these mountain torrents. Where the Rion becomes navigable it is skirted by broad swampy tracts, mostly concealed by their dense aquatic vegetation, and in places even by thickets and forests. But few expanses of still water remain to recall the time when all this district was covered by the sea.

Nevertheless, near the coast there remains a remnant of the old inlet, still known by the Greek name of Palæostom, or "Old Mouth," and which is supposed to have formerly received the waters of the Phasis. In the last century it seems to have communicated by a navigable channel with the sea, and its fauna is still partly marine, although the water is no longer even brackish. It is in some places over 60 feet deep, and is separated from the Euxine by a straight strip of dunes, which the Rion has pierced, its alluvia, like those of the Ingûr and other Mingrelian coast streams, gradually encroaching beyond it seawards. According to Strabo the Rion and its tributary, the Kvirila, were navigable to Sarapanes, 90 miles from the present mouth, whereas boats now stop at Orpiri, which is about one-third of that distance, and during low water, from July to December, there are scarcely more than 20 inches in the channel.

The mountains forming the watershed between the Rion and Kura basins, towards the east and south-east, are continued uninterruptedly by the Suram Hills westwards to the Lazistan coast range. These mountains, imposing even in the presence of the Great Caucasus, rise above the forest zone to the region of pastures, some reaching an elevation of 8,000 feet, but all falling short of the snow-line. Westwards the Ajara, or Akhaltzikh range, which is the last section of the chain, skirts the Euxine at a distance of little over half a mile from the coast.* Seen from the summits of these Lazistan highlands, which were annexed to Russia in 1878, the land presents the aspect of a storm-tossed sea. Here the highest point is the Karch-shall, south-east of Batûm, which is 11,430 feet above sea-level, while the mean elevation scarcely exceeds 8,000 feet, or about 2,000 feet above the forest zone. Mount Arsiani has all the appearance of an extinct volcano, and lava streams have been discharged in prehistoric times from several neighbouring summits. Their upper slopes are clothed with rich pastures, whose flora is much the same as that of West Europe, while the fruit trees of the valleys rival those of the southern slopes of the Caucasus. Lazistan is an earthly paradise, where the natives have generally shown a keen sense of natural beauty in the choice of the sites for their villages. Each of these villages commands a lovely prospect of flowery meads, steep rocks, mountain torrents, cascades, clumps of trees, and scattered hamlets.

* Chief elevations of the Ajara range:—

	Feet.
Nepis-tzkaro, south of Kutaïs	9,485
Nagebo	8,720
Sagalatlo	8,265
Chekhataï	3,355

All the waters flowing from the Arsiani Hills westwards reach the Chorukh either through the Ajara or the Imarshevi. The main stream rises south of Trebizond, and after receiving its first affluents flows parallel with the coast and the Upper Euphrates valleys. In this part of Asia Minor all the hills, plateaux, and valleys run uniformly south-west and north-east. But after a course of about 180 miles the Chorukh, now swollen by the united waters of the Tortum and Olti, escapes directly towards the Euxine through a deep gorge intersecting the coast range. Beyond the defile it has formed an alluvial plain projecting beyond the normal coast-line, and thus serving to shelter the harbour of Batûm from the west. Although little inferior in volume to the Rion, the Lower Chorukh is even less navigable than the Mingrelian river. This is due to its current, which is so rapid that boats taking four or five days to ascend from Batûm to Artvin make the return trip in eight hours.

Climate—Flora and Fauna.

The climate of Transcaucasia is one of the most favourable for vegetation in the temperate zone. Here plants are intermingled in the greatest variety, and assume their loveliest forms. Thanks to the abundant rainfall and to the barrier opposed by the Great Caucasus to the parching north-east winds, the various forest and cultivated species attain a greater elevation than in most other places enjoying the same mean temperature. Thus the walnut flourishes at 5,500 feet in Svania, where the white mulberry and the vine are found at elevations of 3,000 and even 3,400 feet, while in the Upper Rion valley the cotton-tree is met as high as 2,110 feet. In general the vegetation of West Transcaucasia resembles that of Central Europe and the French Atlantic seaboard rather than that of the Mediterranean shores, although in many respects the Mingrelian flora seems to belong to both zones. The indigo plant grows by the side of the cotton-tree on the banks of the Rion, where maize is the prevailing cereal. The tea plant is even said to occur in Lazistan, where the camphor-tree has been acclimatized. In the flowering season the pomegranate groves give to this region the aspect of a vast garden; but, on the other hand, the eucalyptus, so useful for its febrifugal properties, has failed, owing to the severity of the Caucasian winters. The orange also, which formerly flourished at Poti, has disappeared from Transcaucasia since the middle of the last century. The coast region is subject to excessive moisture, while elsewhere there is rather an excess of dryness. The mean temperature of Kutaïs (58° Fahr.) is somewhat higher than that of the coast towns, an anomaly due to the fierce and parching east wind often prevailing in the Rion valley. This wind loses its virulence as it proceeds westwards, so that at Poti it is no longer disagreeable, and ceases altogether at Redut-Kaleh.

The magnificent Mingrelian and other Western Transcaucasian forests have been exposed to fearful ravages, especially since the finer timbers have been sought after by French and other foreign traders. The walnut has nearly disappeared from all the accessible lowland tracts, while the destruction of the upland forests

is slowly modifying the aspect of the country. Yet but little of the cleared land is brought under cultivation, the primitive methods of tillage still prevail, and no pains are taken to improve the vine, which is here indigenous. Under the universal apathy many cultivated tracts have become overgrown with bracken, while the proprietors, after an absence of a few years, no longer recognise their former farmsteads, now concealed amidst the rank vegetation.

The Ingûr and Rion basins are no less noted for their magnificent fauna than for their rich and varied flora. Free Svania, says Radde, "owns the finest cattle in the world." There are two excellent breeds, one small and sprightly, the other strong, majestic, and admirably proportioned. This is the Ukranian race introduced by the Ciscaucasian Tatar traders into the Upper Ingûr valley, where, under new climatic conditions, its colour has become modified, often assuming the shades and stripes of the tiger. The horse, although not numerous in the upland valleys, is also noted for his strength and action, while the Svanian mules and asses fetch three or four times the price of the lowland breeds. The goat and other smaller domestic animals are likewise distinguished for their symmetrical forms and other excellent properties.

In the lowlands the marsh fevers are no less injurious to the animals than to man. Here the Mingrelian peasantry fail even to rear poultry, which Toropov does not hesitate to attribute to the malaria.

Inhabitants—The Svans and Rachians.

The natives themselves are far from being a pure race. Amidst a great variety of types the contrast presented by the fair and brown Mingrelians is very striking. The former are distinguished by a lofty brow and oval face, the latter by broad features and low forehead, though both are alike handsome and of graceful carriage. From the remotest times the eastern shores of the Euxine have been visited by friends and foes of every race, many of whom must have introduced fresh ethnical elements. Arabs, and even negroes, flying from their Turkish masters, have contributed to increase the confusion. Yet, however numerous were the crossings, all have become blended together, jointly tending to develop the beauty of the original type. In the Mingrelian lowlands, and especially on the advanced spurs up to an altitude of about 3,700 feet, nearly all the men are handsome. But in the heart of the highlands, where the struggle for existence becomes more intensified, the features, especially of the women, are often even ugly. Goître and cretinism are frequent amongst the Svans, and as we ascend the Ingûr from the region of maize to the snowy pastures, the change in the appearance of the inhabitants is analogous to that which is observed by the traveller passing from the Italian lakes to the Alpine gorges of the Valais.

The Svans, who occupy the Upper Ingûr and Tskhenis valleys, are evidently a mixed race, although fundamentally akin to the Georgians, to whom they are also allied in speech. They were formerly a powerful nation mentioned by Strabo, and in the fifteenth century they still held the Upper Rion valley. The present

SVAN TYPES.

survivors seem to descend mainly from fugitives driven from the Mingrelian plains by oppression and the calamities of war. In the secluded valleys bordering on the glaciers they found a secure retreat, almost severed by physical barriers from the rest of the world. More accessible are those of the Upper Tskhenis basin, who have consequently had to endure the hardest feudal rule under princes binding them to the glebe. This branch take the name of Dadian Svans, from the ancient Georgian princely title of "Dadian" assumed by the governing family. They are scarcely to be distinguished from their Imeritian neighbours, and their speech is a pure Georgian dialect. The Dadishkalian Svans, in the western division of the Upper Ingûr basin, are also under a feudal lord of Kumîk Tatar stock; but being regarded as serfs, they were emancipated at the expense of the Russian Government when serfdom was everywhere officially abolished. The eastern communities of the Upper Ingûr have long maintained

Fig. 44.—Upper Ingûr Valley.

From the Map of the Russian Staff. Scale 1 : 840,000.

their independence, and are still often distinguished by the epithet of "Free," although they took the oath of obedience to Russia in 1853. And in many respects they are still really free, recognising neither lord nor master, and rejecting even the control of the clergy. In the communal gatherings all have an equal voice, and important decisions require to be adopted unanimously, the opposition of a single member causing the whole question to be postponed until unanimity can be secured. Nor does the commune interfere in personal quarrels, which are regulated by the *lex talionis*. Nowhere else in the Caucasus are the laws of vendetta more rigorously adhered to, so that few are met who have not killed their man. All the houses along the Upper Ingûr are real fortresses, perched on rocky eminences, and commanded by square watch-towers 60 to 80 feet high. The doors of these keeps are on the second or third story, and can be approached only by rude ladders formed of the stems of trees.

Hereditary animosities greatly contribute to the reduction of the population pent up in the bleak valley of Free Svania, or Jabe-Shevi; yet it is still so dense

that the people are obliged to emigrate to the neighbouring tribes. In the days of their military power their young men left their homes as conquerors, often undertaking plundering expeditions to the plains, and even in the fourteenth century they were strong enough to burn the city of Kutaïs. Till recently the excessive population was also checked by the practice of infanticide, in which most of the girls perished, while in hard times grown-up children were sold at prices varying from £30 to £50. The small amount of trade carried on by the tribes lower down is monopolized by the Jews, who are grouped in the village of Lakhamuli. These Jews are distinguished from their brethren elsewhere by their warlike habits. But although practising Christian rites and calling themselves Svans, the hillmen of the Upper Ingûr contract no alliances with them, and even refuse to eat at their table.

All the Svans, estimated at over 12,000, are classed amongst the Christian tribes of Caucasia, and even claim a sort of pre-eminence amongst their co-religionists, pretending that their ancestry were baptized by Christ himself. But their Christianity has been developed in a somewhat original manner under the influence of older rites. Thus their little chapels, large enough to accommodate about a dozen, have crypts filled with the horns of the chamois and wild goat, which are objects of great veneration. The priests, or "papas," form a distinct hereditary caste, though their only privilege is exemption from the laws of vendetta. Although not obliged to keep the lower part of the face covered, the women pass a bandage over their mouths when singing national or religious songs, possibly to prevent the devil from entering. All the Svans are also bound to silence when on the march, or chanting sacred hymns, for the least word might draw down the tempest. Analogous superstitions occur amongst the Norwegian fishermen, the Buriats, and the American hunting tribes.

The district of Racha, comprising the Upper Rion valley, is larger and more populous than the western basins of the Tskhenis and Ingûr, and has always offered a route to graziers, traders, and even warlike bands crossing the Caucasus obliquely from the Georgian to the Terek lowlands. Hence the Rachians, who, like most of the people in the government of Kutaïs, are of Georgian race and speech, are more civilised than their Svanian neighbours. But they also are too numerous for their largely unproductive territory, so that thousands are forced to emigrate to the lowlands, seldom returning without having amassed a small fortune. Most of the carpenters and sawyers met with in Imeria and Mingrelia are Rachians.

The Imeritians, Mingrelians, and Lazes.

The Georgians of the Upper Rion basin bear the general name of Imeritians, or more properly Imerians; that is, "People of the other side," in reference to the Suram Mountains separating them from the bulk of the nation. The term Imereth, or Imeria, has been applied, with the shifting of the border peoples, at times to all Western Transcaucasia, at times only to its upper section, Mingrelia being usually reserved for the low-lying region comprising the alluvial lands and coast district. Thanks to their damp, miasmatic, and enervating climate, the Mingrelians are

MINGRELIAN TYPES AND COSTUMES.

mostly of an indolent temperament, while their brethren who have migrated to the dry district of Tiflis are noted for their active habits. A repugnance to labour was also naturally fostered by former devastating inroads, incessant intestine warfare, and the complete thraldom of the peasantry to their nobles. Here was represented every variety of serfdom, and until 1841 the priests themselves were classed as serfs. Even in recent times the Mingrelian princes were accustomed to apply personally for their tribute. Followed by courtiers, retainers, falconers, dogs, and horses, they would swoop down on some unfortunate vassal, living at his expense as long as the provisions lasted, then betaking themselves elsewhere, and thus making a round of revelry as self-invited guests, and leaving ruin in their wake. No women, especially if well favoured, were safe from these despots, who carried them off and sold their children into slavery. Although generally too weak to resist, the Mingrelians were nevertheless occasionally driven by this oppression into revolt, as in 1857 and 1858, when they appealed to arms for the recovery of their captured women, and to get rid of the yoke riveted by their masters round their necks. But all such efforts were quenched in blood, nor was serfdom finally abolished till three years after its suppression in the rest of the empire. But many of its effects still remain, and in a teeming land the Imerians and Mingrelians continue, like the wretched Lombard peasantry, to live almost exclusively on a mess of maize or millet resembling the polenta of Italy. The usual dress is a tattered smock fastened by a cord or strap to the waist, and instead of a hat a bit of cloth retained on the head by a string passed under the chin. The Mingrelian farmstead consists of a wretched hovel of wood or branches, surrounded by badly cultivated maize-fields, with a few lean pigs or goats, and one or two buffaloes wallowing in the muddy pools.

Fig. 45.—Mingrelian Lady.

Although till recently dwelling beyond the political limits of Russian Transcaucasia, the Lazes of the Ajara and Chorukh basins are none the less akin in speech and race to the Mingrelians and Georgians. Those still subject to Turkey, and reaching westwards beyond Trebizond, are also of the same stock, though more or less mixed with other elements, while beyond these limits many geographical names show that in remote times the interior of Asia Minor was largely peopled by Georgians. Rosen has established the near relationship of the Laz and Georgian tongues. The language current on the banks of the Chorukh differs little from Mingrelian, though that of the west coast is largely affected by Turkish

and Greek elements. In their customs also the Lazes resemble the Imerians. Both respect old age, are extremely hospitable, and, while full of curiosity, still maintain a dignified reserve. Like most Caucasians, they are fond of display and rich attire, nor do they deserve the charge of indolence brought against them by careless observers, for their fields are well tilled and their houses kept in good order. The Laz women combine with beauty and symmetry of form a rare reputation for courage. The Moslem Lazes have emigrated in large numbers to Turkish territory since the annexation to Russia in 1878, while the Christians will now probably find their way to Tiflis and the Russian ports on the Euxine.

The national character could scarcely fail to be modified under the Turkish régime. Three centuries ago all the Lazes of the Upper Ajara valleys were Christians, and many villages still boast of well-preserved churches in the best Byzantine style of architecture. Certain communes did not conform to the Moslem creed till about the close of the eighteenth century, and several, though nominally followers of the Prophet, are still practically Christian, the two faiths often overlapping to such an extent that it becomes difficult to say where the one ceases and the other begins. With their religion the Turks also introduced their language into all the towns and large villages, so that the Laz dialect ceased to be current except in the remote rural districts. The Armenian colonies scattered over the land had also forgotten their mother tongue in favour of Turkish, which must now in its turn slowly yield to Russian, just as the Mohammedan must give way to the Christian faith.

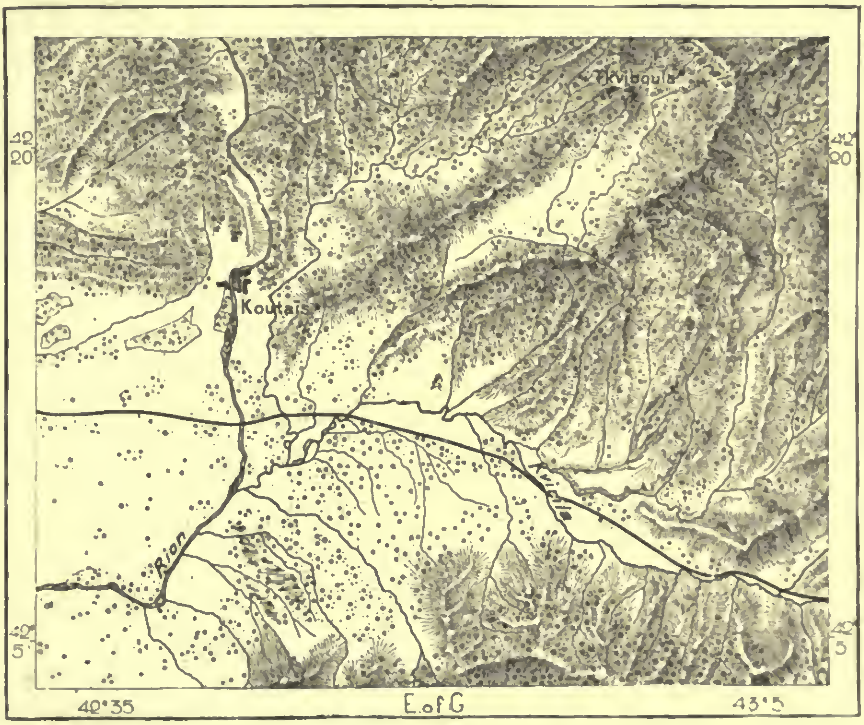
Topography.

The Rion valley, whose commercial importance was already recognised by the prehistoric Argonauts, and where, thirty centuries later on, the Genoese also went in search of the "Golden Fleece," promises once more to play a large part in the general development of trade. For some years past it has been crossed in its entire length by a railway connecting Tiflis with the Euxine, and this is but a first section of the line destined, sooner or later, to reach the Indus. But the site of the old Greek trading route, like that of their chief emporium Colchis, has long been forgotten. The village of *Sharopan*, at the junction of the Kvirila and Dzirûla, claims to stand on the spot where grew the famous grove penetrated by the legendary Jason in search of the "Golden Fleece." At the gorges of the Khani, south-east of Kutaïs, are the extensive ruins of the former Turkish fortress of *Bagdad*, whose Moslem inhabitants were driven into exile in the last century. Nevertheless Bagdad is still a considerable village.

Kutaïs, the present capital of the province, which comprises most of Western Transcaucasia, is happily situated at the junction of the three valleys watered by the Rion, Kvirila, and Khani, and at the head of the alluvial plain stretching thence to the coast. Standing on the first rising grounds of the advanced spurs of the Caucasus, it is well sheltered from the north wind, while its gardens and parks are abundantly watered by the Rion, which traverses the town. Kutaïs, if not the traditional city of Medea, is at all events a very old place, for it is mentioned by

Procopius under the name of Kotatission, and it constantly figures in Georgian history, sometimes even as capital of the kingdom, and always as a noted stronghold. The old town stood on the right bank of the Rion, at the foot of the acropolis; but the modern lies mainly on the opposite bank. Its most remarkable monument is a ruined cathedral built by the Bagratides early in the eleventh century on the acropolis. On it have been modelled most of the other religious edifices in the country, so that it is rightly regarded as the most precious relic of Georgian art. Thanks to its trade and local industry, chiefly hat-making, Kutaïs has recently made rapid progress, the population rising from 4,000 to 12,000

Fig. 46.—Kutaïs and the Rion and Kvirila Junction.
From the Map of the Russian Staff. Scale 1 : 440,000.



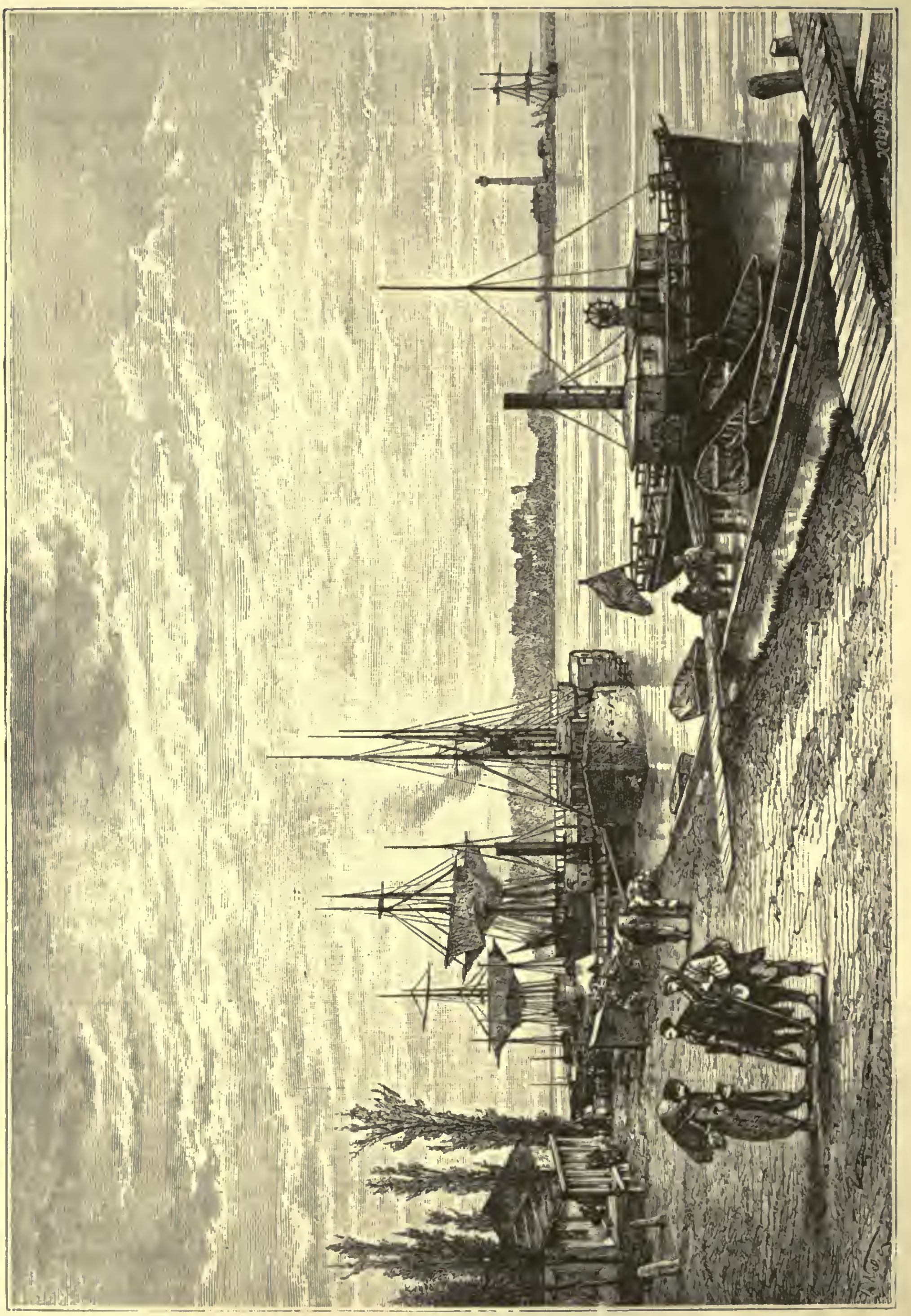
6 Miles.

in a few years. In the district is found a species of jet used for bracelets and other ornaments; but the rich Tkvibula coal-fields, some 18 miles to the north-east, have been but little worked. Since 1879 the manganese deposits of the Upper Kvirila valley, estimated at several millions of tons, have also attracted attention.

Khoni, at the entrance of the Tskhenis valley, north-east of Kutaïs, is the market town of the Dadian Svans, and lower down is the large village of *Kulashi*, near the junction of the Rion and Tskhenis, in the most densely peopled district of Caucasia.

Orpiri, the river port of the Rion, at the junction of the Tskhenis, is inhabited by members of the Skoptzi sect, who are mostly wealthy, though the trade of the place has fallen off since the opening of the railway. The two seaports of *Redout-*

Fig. 47.—Poti.

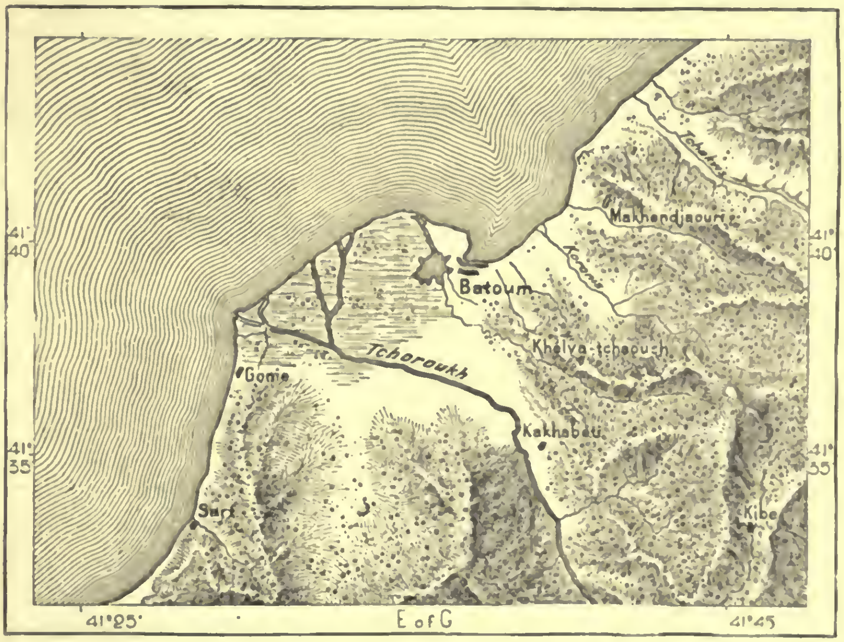


Kaleh and *Poti* are rather shunned by traders on account of the local fevers, and by sailors on account of their bad anchorage. Redout-Kaleh, whose name is

composed of a French and Turkish word, both meaning the same thing, is a poor Russian village founded in the present century as the seaport of the rich Lower Ingûr district, but now almost forsaken in favour of Poti, situated farther south, at the mouth of the river. Its houses, raised on piles and surrounded by palisades, stretch for a considerable distance along the unhealthy marshy banks of the river, whose floodings convert the town twice a year into a peninsula. The harbour is rendered inaccessible to large vessels by the bar at the mouth of the Rion, all the engineering efforts to remove which have hitherto had but partial success. Hence it is little used except for shipping cereals and raw silk. The exports amounted in

Fig. 48.—Batûm.

From the Map of the Russian Staff. Scale 1 : 320,000.



6 Miles.

1876 to nearly 5,000,000 roubles, while the imports average scarcely more than 800,000.

A much finer harbour is that of *Batûm*, lying 30 miles to the south-west, and ceded by Turkey in 1878. Even before the annexation it was far more a Russian than a Turkish port, for here the large Odessa steamers transhipped their cargoes in 60 feet of water to smaller vessels capable of crossing the bar at Poti. Although declared a free port by the treaty of Berlin, Batûm has none the less already become a strong fortress. But with all its advantages, the peninsula created by the alluvia of the Chorukh on the west is constantly increasing, and threatening to still further restrict the available space in the harbour, which is already insufficient to accommodate more than twelve large vessels. But nothing would be easier than to connect the port with the river by a canal, which, with the railway now being constructed by the town of Uzurgeti to the Poti-Tiflis line, will render Batûm the

common outport of the Rion and Chorukh basins. The extraordinary fertility of this region will thus secure it a certain commercial importance in future. The chief exports are cereals, cotton, the excellent apples known in Russia as "Crimean apples," and the oil yielded by the dolphins taken in the bay.

The chief inland town of Russian Lazistan is *Artvin*, standing on the slope of a hill at the outlet of the gorge of the Lower Chorukh, and at the head of its navigation. It is built in the form of an amphitheatre, with a circuit of not less than 5 miles, including its gardens. Besides dyeing, which is its staple industry, it manufactures silks and other woven stuffs. Its traders, mostly Armenians, have relations through Batûm with Constantinople and Marseilles. Here the Laz race is said to reach its highest physical perfection, and all the children might serve as models for the painter or sculptor.

Ardanûj, on a plateau south of Artvin, was formerly capital of the kingdom, and higher up in the heart of the mountains is *Olti*, ceded in 1878 by Turkey. Like Artvin, it is a city of fruits and flowers, and the chief trading-place between Ardahan and Erzerum.

VII.—THE KURA BASIN.

GEORGIA, TRANSCAUCASIAN TATARY.

The Kura and Araxis may be regarded as twin, but independent streams. Of nearly equal length, and draining about an equal area, they remain separated throughout their upper and middle course by plateaux and lofty ranges. In the time of Strabo they had even separate mouths, and at present unite their waters in the neighbourhood of the Caspian, scarcely more than 20 feet above the level of that sea. Ethnically also the two river basins are quite distinct. Both are now no doubt occupied by Tatar peoples, but the Georgians are still predominant in the Upper and Middle Kura valley, while the Araxis is chiefly occupied by Armenians. Politically the former belongs entirely to Russia, whereas the latter rises in Turkish territory, and for about half its course its right bank, with all its southern tributaries, waters Persian districts.

River Systems—The Kura.

The Georgian river known as the Kura, or Kur, names recalling the Greek Kuros (Anglicised Cyrus), has its farthest source in the "Pearl Brook," or "Coral Water," of the Turks, a torrent flowing from a cirque, or old hill-encircled lakelet, through a narrow gorge round the east foot of the Arsiani range. It descends thence through a series of defiles and sudden windings between the Ajara and Trialetes Hills, west and east, down to the plains of Tiflis. In one of these defiles, between Atzkhur and Borjom, it falls altogether about 740 feet through a succession of rapids in the space of 15 miles. The plateau whence flow its head-

streams is very irregular, but it becomes much more uniform between Ardahan and Akhaltzik, where it forms the true water-parting between the Kura and Araxis, with a mean elevation of from 7,000 to 8,000 feet above the Black Sea. The depressions on this monotonous plateau are filled with lakes draining some to the Araxis, some to the Kura, while others have become brackish tarns with no outflow, and others again half dried-up fens and marshes. The aspect of the land still

Fig. 49.—Akhalkalaki Plateau.

From the Map of the Russian Staff. Scale 1 : 936,000.

15 Miles.

speaks of a time when it formed a vast lacustrine basin with inlets ramifying into the surrounding hills. This region was formerly lit up by a double line of active volcanoes rising to the east of Akhalkalaki, and running north and south vertically with the axis of the Trialetes range. Mount Samsar, one of these volcanoes, has an oval crater nearly 2 miles long, and its lava streams stretch north-west over a large portion of the plateau. The Great and Little Abûl, rising from a common base, resemble in form the double cones of Ararat, and from their trachytic

porphyry summits a northern view is afforded, embracing all the Caucasus from Elbruz to the Tebulos-mta. Other extinct volcanoes are disposed in crescent form round the cirque enclosing the romantic Lake Toporovan, which, with its remains of lacustrine dwellings, itself resembles a vast flooded crater. This sublime but gloomy tableland, with its black mountains, yawning abysses, and ancient lava streams, "still haunted by demons and goblins," presents a striking contrast to the winding valley of the Kura, with its leafy shades and sparkling running waters, still occasionally broken by narrow lava gorges and columnar crystalline cliffs many hundred feet high, and capped with the ruins of ancient castles. All these volcanic highlands and rugged terraces rising to the west of Tiflis form a sort of advanced promontory of Asia Minor, about 60 miles long, within whose narrow limits are brewed nearly all the fierce tempests and hailstorms that burst on the neighbouring Karthalian plains. The frequency of these hail-storms has compelled the peasantry to abandon the cultivation of certain districts in this region. A second zone of tempests stretches along the foot of the Yelizavetpol Mountains, preventing the extension of sericulture in consequence of the great mortality caused by thunder amongst the silkworms.*

Fig. 50.—Tatar Type.

Before its junction with the Aragva, which is scarcely inferior in volume to the main stream, the Kura flows south and south-east mainly in a line with the Great Caucasus and with the Yora and Alazan, the two tributaries which join it after emerging from the upper

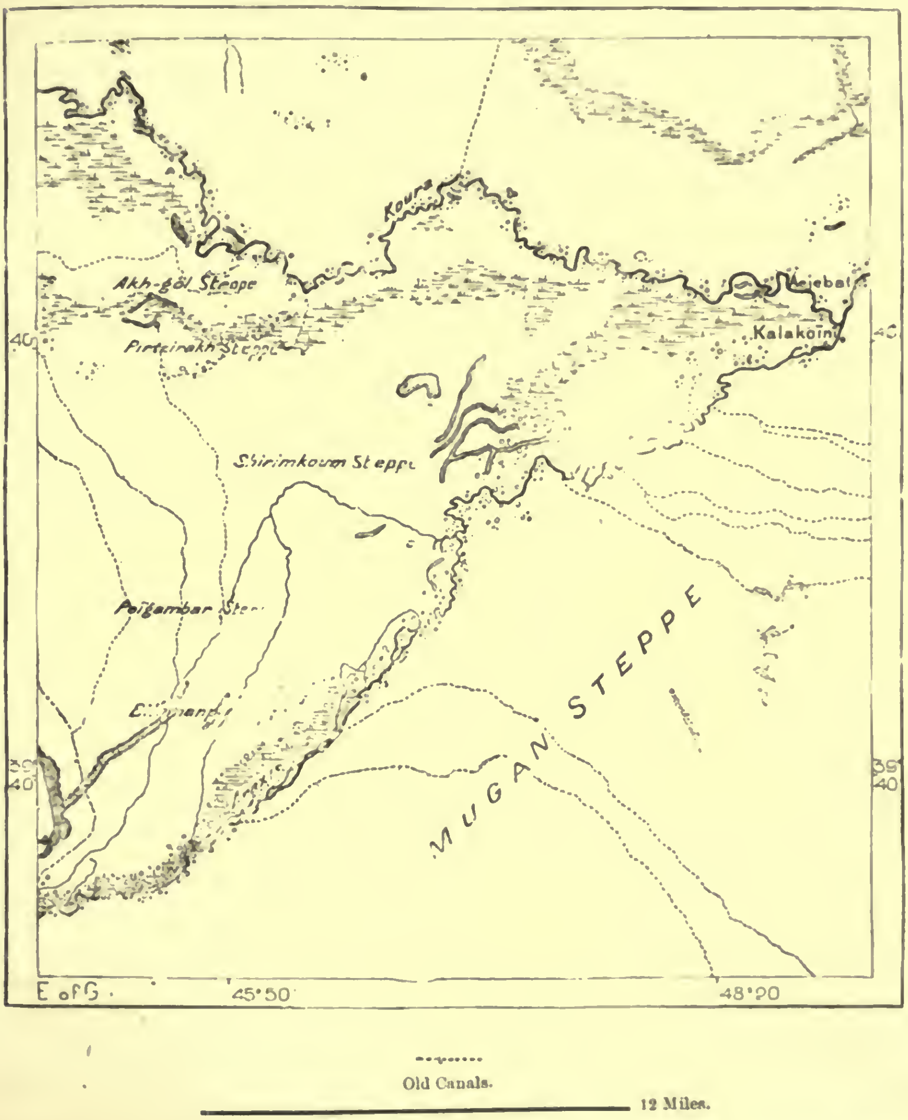
* Chief elevations of the Upper Kura basin:—

	Feet.
Kizil-Gyaduk, source of the Kura	10,350
Great Abûl	11,125
Samsar	11,000
Godorebi	10,630
Emlekli	10,165
Koyeretîn-dagh, west of the Kura	10,115
Arjevan	9,195
Kanli Pass, between the Kura and Chorukh	9,050
Kojor Pass, between the Akhaltzik plain and Tiflis	4,390

gorges. At the point where it is crossed by the road from Yelizavetpol to Baku, a little below the confluence of these streams, the Kura is already navigable for craft drawing 4 feet, although, owing to the scant population along its banks, the water highway of some 450 miles has hitherto been little utilised. Fishing is almost the only industry carried on along its lower course, which teems with fish

Fig. 51.—The Kura and Araxis Confluence.

From the Map of the Russian Staff. Scale 1 : 675,000



Old Canals.

12 Miles.

probably more than any other spot on the globe. Here the chartered company captures prodigious quantities of "white fish" and sturgeon, paying a yearly revenue to the Government of not less than 120,000 roubles. Yet according to the descriptions of Pallas these fisheries were even still more productive during the last century, when as many as 15,000 sturgeon were taken in a single day.

Whenever the fishing had to be interrupted for four-and-twenty hours the Kura, here 490 feet wide and 70 feet deep, became one moving mass of fish. The diminution of their numbers has been attributed to the introduction of steam navigation, which frightens away the shoals ascending the river to the spawning grounds.

The united volume of the Kura and Araxis is estimated at about 24,000 cubic feet per second, which, in proportion to the area of their basin, is much less than that of the Rion, a difference due to the less abundant rainfall and greater evaporation in the region draining to the Caspian. A large portion of the Kura basin consists of almost waterless desert incapable of cultivation, though rich in herbage after the rains, and in spring frequented by Tatar graziers, who drive their herds to the upland pastures in summer. Even in the heart of Georgia, between the Kura and Yora, and thence to the Alazan, we meet with rocky steppes destitute of permanent dwellings, and above the triple confluence the stony and argillaceous land everywhere presents an aspect of monotonous aridity. During the last century rice was cultivated by the Tatars along the left bank of the Kura, north of Yelizavetpol. But they were compelled by the inroads of the Lezghians to abandon their fields, and nothing now remains except traces of the old irrigating canals from the Yora, and a few Tatar herdsmen, who are obliged to burrow in the ground to shelter themselves from the cold blasts that sweep the bare Karayaz plateaux in winter. With the first spring days they gladly quit their wretched underground hovels, migrating through the beech forests southwards to the fine Alpine pastures of the Gok-chai.

Agriculture—Irrigation Works—Climate.

In these lands civilisation has retrograded, since agriculture has been replaced by a nomad pastoral life. Yet in winter during the low waters the Kura and Araxis together have a total volume of 6,800 cubic feet, and in summer about 35,000 cubic feet per second might be raised for irrigation purposes. But nothing has been done beyond constructing the so-called "Mary Canal" across the Karayaz steppe between the Kura and Yora. Unfortunately this tract is very unhealthy, so that few venture to risk their lives in reclaiming the land. The Tatar populations, who have retained possession of their lands between Nukha and Shemakha, are still able to show the Russians how a proper system of irrigation may transform the desert to a garden. The torrents descending from the gorges of the Caucasus are arrested, on entering the plains, by dams which divide and subdivide them into countless rills, until the last drop of water is utilised before reaching the Kura. But the irrigation works might be met by channels from this river, by which the whole steppe could be brought under cultivation. Some of the waste spaces are at present dangerous for caravans, owing to the want of fodder and the poisonous herbs, such as the Pontine wormwood, fatal to horses. The army sent by Peter the Great in 1722 against Shemakha thus lost all its artillery horses, and the same disaster overtook General Tzitzianov's army a century thereafter.

A portion of the Karabagh and Shirikum steppes between the Kura and Araxis, and those of Mugan stretching from the right bank of the Araxis and Lower Kura to the foot of the Talish Mountains, were formerly cultivated and well-peopled districts. The great city of Bilgan, destroyed by Jenghis Khan, stood on a canal constructed fifteen hundred years ago across the Karabagh steppe, and when Timur restored the canal two centuries afterwards this city reappeared and continued to flourish till the last century. East of the Araxis the traces have been discovered of numerous canals running from its right bank eastwards across the steppe; but these could not be restored without tapping the river above the old dams, either because its mean level has fallen, or because the land has been raised by its alluvia. One of the canals followed by Toropov is no less than 90 miles long, and on its banks are the remains of a vast city. Ruined caravanserais and choked-up cisterns also mark the site of other now abandoned trade routes. The plain is here and there dotted with barrows, and throughout the peninsula, formed by the junction of the Kura and Araxis, there are numerous lines of earthworks, flanked by redoubts and hillocks used as outposts. The general disappearance of the population, whose presence is shown by all these remains, dates from the Mongolian invasion of the thirteenth century, when those who escaped service in the armies of Batu Khan abandoned their towns and land, and took refuge in the mountains. The irrigating canals now became choked with mud, and the waters of the Kura and Araxis overflowed into the surrounding depressions, where they formed unhealthy morasses, and even real lakes, such as that of Makhmûd-Chalassi, though many of these have since evaporated, leaving nothing behind except saline tracts fringed with a russet border of sickly vegetation. Elsewhere the land is covered as far as the eye can reach with the grey mugwort or the white-flowering delphinium. Yet it would be comparatively easy to restore its fertility to this region, which might support an agricultural population of at least two millions. The survey carried out in 1860 showed that in the lower plains there are over 5,000,000 acres capable of being irrigated. A large portion of the steppe is covered with a black loam, which only awaits the fertilising waters to become one of the granaries of Western Asia. But even as it is the soil at the foot of the Talish Mountains is moist enough to grow vast crops of cereals, and here the Raskolniks have already flourishing villages, which have begun to do a large trade since the restrictions on free intercourse have been removed. Nowhere else in Caucasia has Russian colonisation been more successful.

Formerly it was feared that the main obstacle to the reclamation of the land would be the insalubrity of the climate, caused, as in the French Camargue, by the decomposition of organic matter under a fierce sun. But this difficulty seems to have been exaggerated. The intense heats of these plains appear to have been formerly symbolized by the multitudes of venomous snakes said to guard their approach. Even Plutarch tells us that the army of Pompey was arrested by fear of these reptiles, and so recently as 1800 the Russians under General Zubov are said to have found the land in winter covered with vipers in a torpid state. But although wild beasts were even supposed to avoid this region, Toropov and other

travellers assure us that serpents and scorpions are so rare on the Mugan steppe that they cause no alarm to the graziers frequenting it. They dig up the ground, but only in search of truffles, which here abound. Land and water tortoises are also extremely numerous wherever there is any moisture, and flocks of antelopes

Fig. 52.—Mouths of the Kura.

From the Map of the Russian Staff. Scale 1 : 820,000.

are occasionally seen bounding over the plain, while the marshes and running waters of the delta attract vast multitudes of birds.

Lower Kura Basin—Apsheron Peninsula.

Like the Rion, the Kura is continually encroaching on the sea, which it colours for a great distance with its reddish-yellow waters. In the thirty-three years

between 1829 and 1862 the land advanced about 54 square miles. The main channel has also pierced the line of dunes continuing the normal coast-line, beyond which it has ramified into two branches, each of which has developed a peninsula by connecting islets and sand-banks with the mainland. Between the two advanced streams of the delta there are also numerous strips of land, evidently formed by the alluvia of the Kura. Only the north-east swell created by the polar winds has reacted on these deposits, causing them to assume a crescent form, with their concave sides facing seawards. The island of Sari, lying south-west of the extreme peninsula of the delta, is disposed in a similar manner by the same waves. All the Lenkoran coast has also been enlarged by the alluvia first carried seawards with the current, and then driven landwards under the action of the winds. In the same way a broad belt of marshy land has been formed at the foot of the advanced spurs of the Iranian plateau. But these unhealthy tracts are infested by such dense clouds of mosquitoes that the Tatar natives are obliged to pass the night in pavilions raised like picturesque turrets into the purer atmosphere above their dwellings.

The hilly district of Lenkoran, wrenched by Russia from Persia, belongs geographically to that state, for it is merely the escarpment of the lofty terraces rising above the southern shores of the Caspian, and commanded by the Savalan volcano. By holding this district the Russian armies are able to reach within their own territory an elevation of from 4,000 to 6,000 feet, whence they have no further difficulty in penetrating into the Iranian plateaux. Here the land being abundantly watered by the rains brought by the northern winds blowing steadily from the Caspian, its flora and fauna differ from those of the Caucasus. We are already within the domain of the tiger, while some of the plants flourishing in the dense forests resemble those of the tropics. Still the arborescent vegetation covering the slopes of the Talish range between 650 and 6,000 feet corresponds rather with that of Central Europe. Few regions present a greater contrast in their flora than do the slopes of the Talish and the Mugan steppe, the arid parts of which latter yield only five species of plants. Ethnically, also, the difference is equally marked, for the Talish highlands already belong in this respect to the Iranian domain.

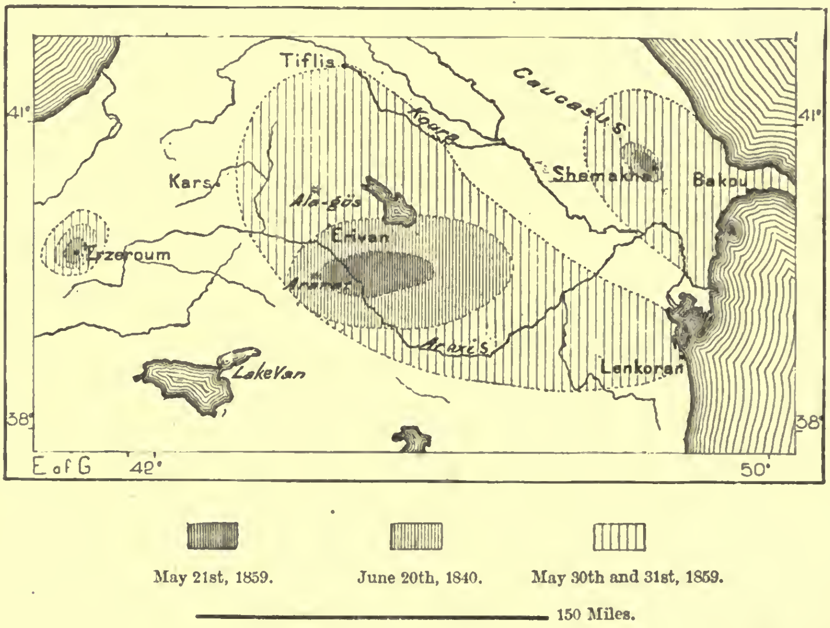
In the district north of the Kura, which still retains its old Persian name of Shirvan, a few eminences isolated in the midst of the plain seem to have formerly belonged to the Caucasian system, from which they have gradually become separated by the erosive action of running water. But this region has also been subjected to more sudden changes by underground agencies. Here earthquakes are still frequent, causing great damage, especially to the city of Shemakha, where in 1669 as many as 8,000 persons were in a few seconds buried under a heap of ruins. According to the local chronicles, the village of Lacha, lying farther south, was completely swallowed up, with all its inhabitants, flocks, and herds. Shemakha, with the industrious village of Boskal, was again wasted in May, 1859, after which the seat of Government was transferred to Baku, and most of the inhabitants left the place. Those who remained again suffered from a violent

shock in 1872. According to Abish the seismatic waves are here propagated north-west and south-east in a line with the continued axis of the Caucasus, and Shemakha consequently lies at no great distance from the centre of the movement. Explosions of burning naphtha occasionally throw up masses of earth and stones, accompanied with smoke and flames. The botanist Koch found the débris of one of these eruptions covering the steppe for a space of over half a mile, where all the crevasses were filled by brackish water with a slight flavour of naphtha.

The Apsheron peninsula, forming the eastern continuation of the Caucasus, together with the coast-line stretching thence southwards to the Kura delta, is the scene of constant igneous activity. Jets of gas, hot springs, mineral oils, mud

Fig. 53.—Chief Regions of Earthquakes in Caucasia.

From the *Memoirs of the Geographical Society* of the Caucasus. Scale 1 : 8,000,000.

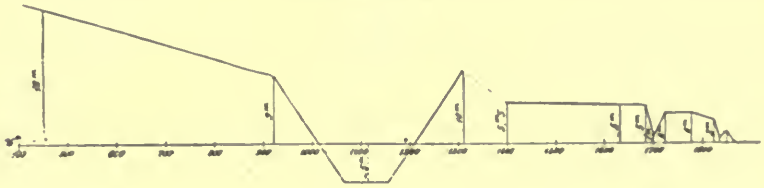


volcanoes, and even lava streams bear witness to the internal commotion throughout the region, which, like the segment of a crater, encircles the Gulf of Baku. It would seem as if the forces by which the Caucasus was upheaved were here still at work endeavouring to continue the range across the Caspian. Yet a subsidence has, on the contrary, been going on during recent times, as shown by the building engulfed in the harbour of Baku, and by the tradition according to which the island of Nargin was formerly attached to the mainland. Khanikov has shown that since the tenth century the seaboard at the eastern extremity of the Caucasus has been subject to various oscillations, rising 60 feet above its present level, then sinking 18 feet below it, and again rising and falling alternately. The whole Apsheron peninsula, with the various islands continuing it eastwards, has evidently

been upheaved, but not uniformly, for the relief of the land shows traces of numerous folds, due, doubtless, to side pressure. Mud volcanoes are dotted over the peninsula, all the depressions are filled with marshy soil, and the coast-line is disposed in curves, like those of the Kura delta. The "Holy Island," north of Apsheron Point, which assumes an analogous form, is of volcanic origin, like all those in the neighbourhood. Kumani, one of them, rose above the surface in 1864, and Lozi, another, was the scene of three eruptions in 1876, during which stones were thrown as far as Cape Alat, on the mainland. Shoals of seals * frequent the coast of the peninsula, but most fishes are driven away by the exhalations of gas and naphtha.

In many places these gases are liberated by simply piercing the surface of the land, and they are so inflammable that a mere spark suffices to set them burning till extinguished by a strong wind or heavy shower. The flames will at times even burst forth spontaneously, and during boisterous nights the hillsides have been swept by sheets of phosphorescent light. Even in the middle of the sea the naphtha streams bubble up, clothing the ripples far and near with a thin iridescent coating. Near Cape Shikov, south of Baku, a gas jet produces such a violent eddy

Fig. 54.—Oscillations of the Baku Coast during the last 1,500 Years.
According to Khanikov.



that boats are obliged to cast anchor to avoid being sucked in. Elsewhere the underground forces not only throw up jets of gas, petroleum, and asphalt, but upheave the very bed of the sea, as was lately seen when an islet rose to the surface near Baku. The legend of Prometheus, who stole fire from heaven, may, in the popular fancy, be possibly associated with the flaming hills and waters of this region.

The chief focus of the burning gases lies some 9 miles north-east of Baku, on the margin of a considerable saline pool near the villages of Balakhan and Surakhan. The district, known by the name of Atesh-gah, has become famous as the hallowed shrine of the fire worshippers. Yet this sanctuary, at least in its present form, would not seem to be as old as is generally supposed, dating only from the seventeenth century, when the courts of the Tatar khans of Derbent, Shemakha, and Baku were much frequented by Indian traders. The "Fire Temple" is now a mere redoubt, tolerated in the corner of a vast naphtha and asphalt factory, which is directly fed with combustible gas from the underground fires. The votaries of this

* The Caspian Seal (*Phoca Caspica*) differs specifically from that of Lake Baikal, though both are related to the Ringed or Arctic Seal (*Phoca fœtida*). Both are also referred by Joel A. Allen, "History of North American Pinnipeds," to a pliocene ancestor from the south.—Ed.

temple have no longer any notion of a positive creed, and on the altar, by the side of Hindu deities, are seen the vases associated with Parsee worship, Russian images of St. Nicholas, statues of the Virgin, Roman Catholic crucifixes, objects which are all treated with like veneration.

The commercial importance of this great natural workshop has been much enhanced of late years, and the sale of rich naphtha plots has already yielded over 3,000,000 roubles to the State. Nothing can be imagined more simple than the structure of these lime-kilns. It suffices to light the gas escaping from the crevassed calcareous layers, and the stones are gradually reduced by the heat to the state desired by the lime burner. In private houses and workshops these jets are used

Fig. 55.—The Apsheron Peninsula.

Scale 1 : 450,000.

Mud Volcanoes. Naphtha Wells. Gas Jets. Submerged Ruins.

8 Miles.

for heating, lighting, and cooking, though the illuminating power of the Balakhan gas is much inferior to that of the artificial article, for it possesses far less carbon. To the internal pressure of the gas is due the rising of the naphtha, which is forced upwards through the sandy and shingly layers below the superficial tertiary strata. With the petroleum stream there are carried up large quantities of sand, which accumulates about the orifice, where it gradually forms conic mounds 50 feet high. So far the seven hundred naphtha wells sunk in the neighbourhood of Baku have shown no signs of exhaustion. They supply over five-sixths of the petroleum of the Caucasus. Between 1870 and 1878 the yield was increased over tenfold, and quite a fleet of steamers and sailing vessels has been equipped for the export of this produce.

GEORGIAN TYPES AND COSTUMES.

But immense loss is caused by the ignorance of those engaged in the trade. Thus a well at Balakhan, yielding 4,800 tons of naphtha daily, ran waste for four weeks before a reservoir could be prepared to receive the oil. The total yield of naphtha at Baku amounted in 1878 to about 7,000,000 cwt., of which nearly 3,500,000 cwt. were exported.

Inhabitants—The Georgians.

In Central as in Western Caucasia the most numerous race are the Georgians, or Karthvelians, descendants of the Iberians spoken of by Strabo. The statuettes found in the graves represent exactly the same type and the same style of head-dress as those of the present inhabitants, so that no change has taken place in this respect during the last two thousand years. Masters of the land from the remotest historic times, the Georgians have succeeded, if not in maintaining their independence, at least in preserving their ethnical cohesion and various national idioms. They formerly occupied a wider domain, and although encroached upon at various times by Persians, Medes, Armenians, Mongols, Turks, and now by the Slavs, their territory still stretches from the plains of the Kura to Trebizond, and from Mount Elbruz to Mount Arsiani. Of all the Caucasian peoples the Georgians, who are estimated at upwards of a million, form the most compact and homogeneous nationality. In Georgia is situated Tiflis, capital of all Transcaucasia.

As a political state Georgia had its periods of prosperity and military fame. Especially in the twelfth century, in the reigns of David the "Restorer," and of Queen Tamara, the Karthvelian kingdom acquired a decided preponderance over all the Caucasian lands, and the name of Tamara has remained popular from the Black Sea to the Caspian. In all the upland valleys she is the theme of countless legends and national songs; most of the ruins scattered over the land are supposed to be the remains of her palaces and strongholds; as a ruler of men the popular enthusiasm ranks her with Alexander; as a saint with St. George and the prophet Elias. But the period of Georgian ascendancy was of short duration, and the invasion of Jenghis Khan was followed by incessant warfare and civil strife, which ended only in 1802, when Georgia was officially incorporated in the Russian Empire. Its geographical situation permitted the inhabitants to maintain their independence and become fused in a compact national body. Most of the Karthvelians dwell on the plains, where the conditions of soil and climate oblige them to live as agriculturists scattered over the land. Their territory is everywhere enclosed by lofty mountains, whose occupants, pent up in their narrow, bleak, and unproductive glens, cast envious glances on the lowlands, never failing to swoop down whenever an opportunity is offered for making a successful foray. The Georgian territory is, moreover, divided into three distinct parts, clearly defined by forests and mountain ranges. The Kura basin in the east, those of the Rion and Ingûr in the centre, and that of the Chorukh in the west, are so many detached geographical areas, whose inhabitants were naturally involved in different political careers. The severance of the Georgian nationality into distinct fragments was also rendered almost inevitable

by the form of the several districts, all of which are greatly elongated east and west.

The Karthvel, or Karthalians, properly so called, who have retained the collective racial name, are the Georgians dwelling east of the Suram Mountains, in the old lacustrine plain whose centre is occupied by the town of Gori, and which terminates at Mtzkhet, ancient capital of Karthalia. They become blended eastwards with the Grusians of Tiflis, whose name is frequently applied collectively to all the branches

Fig. 56.—Mtzkhet, Ancient Capital of Georgia.

of the Georgian family. The Kakhetians, the easternmost of these branches, occupy the Yora and Alazan valleys; west of the Suram Mountains dwell the Imerians and Mingrelians in the Rion, Tskhenis, and Lower Ingûr basins; the Gurians hold the northern slopes of the Ajara Mountains; the Lazes a portion of the Chorukh basin west of that range; lastly, the Svans, with a few other tribes, have found a refuge in the fastnesses of the Upper Caucasus valleys. The various branches of the Karthalian family cannot all of them converse together, largely

owing to the foreign words that have crept into the different local idioms. But the general resemblance is very marked throughout the whole region from Trebizond to Tiflis, while amongst the educated Karthalians complete unity of speech has been maintained by the works of all sorts that have been published in Georgian. At least since the tenth century there has flourished a Karthalian literature, beginning with a simple translation of the Bible and gradually enriched by religious treatises, epic poems, songs, dramas, scientific writings, and more recently with translations of foreign works and periodical publications. Nevertheless the cultivation of the Georgian language and the intellectual development of the nation have been arrested by extreme centralizing tendencies. Since 1807 the Georgian archives and the valuable literary and historical documents found in Tiflis have been removed to St. Petersburg. Studied efforts are also being made to replace Georgian by Russian, and the latter language is now compulsorily taught in all the local schools. The national speech, by some grouped with the Aryan, by others with the Ural-Altaic family, would really seem to stand quite apart, a view already held by Klaproth, and since confirmed by Zagarelli, who has paid the greatest attention to the structure of the language. Like the Basque in Europe, Georgian appears to be the surviving representative of a form of speech formerly current throughout a far wider area, and absolutely distinct from the Aryan, Semitic, and Uralian linguistic stocks. The alphabet in use, at least since the tenth century, is derived, like the Armenian, through the Pahlvi and Zend from the Aramæan.

With the exception of the Lazes, who are mostly Mohammedans, the Karthalians belong to the Greek rite, and to their patron saint, George, is with some probability attributed the name of Georgia, whence the Russian Grusia. North of the Rion and Kura this saint is held in greatest veneration, whereas in the region south of those rivers, including the whole of Armenia, the worship of Mary has everywhere replaced that of Ma, or Maya, goddess of the teeming earth and of the harvest. The Georgians are strongly attached to their faith, and notwithstanding their naturally gentle disposition, they have always energetically resisted the successive religious persecutions of the Turks and Persians. The Byzantine style of their churches, introduced from Armenia, assumed in mediæval times a certain originality, still represented by exquisite naves, belfries, and apses, dating especially from the tenth and two following centuries. Even in the remotest upland valleys the traveller is surprised to meet with churches in a remarkably pure style, mostly standing on pleasant hills in the midst of leafy thickets. Nearly all are so built as to serve also as strongholds, while some are even subterraneous, betrayed by no outward signs, and capable of sheltering the community in troubled times. In Kakhetia the rocky eminences of the Karayaz steppe overlooking the Yora valley are pierced with caverns, said to have been excavated as churches and convents in the sixth century. In all the hilly districts of Karthalia the peasantry are also acquainted with labyrinthine caves, the former abode of a troglodytic people. Hundreds of strange towers are also met, recalling the *nuraghi* of Sardinia, but of unknown origin and use, although each is associated with its special legend.

The old method of constructing dwellings has persisted for over two thousand years. Whole villages consist of nothing but holes dug in the ground or hewn out of the rock, revealed from without only by masses of foliage, or by clay roofs on which the women sit in the cool of the summer evenings. In most of the towns many houses are also still covered, instead of a roof, with a layer of hardened earth about 2 feet thick, and inclined just sufficiently to allow the water to run off through the openings in the low wall enclosing the terrace. On this surface there grows a dense leafy vegetation, in which the *Lepidium vesicarium,* a species of crucifera, predominates; but it withers up in summer, and is got rid of by being set on fire, these nightly bonfires often producing a very startling effect as they blaze up suddenly, and as suddenly die out on the housetops. As regards health the clay terraces are far preferable to the European roofs, as they maintain a warmer temperature in winter and a cooler in summer. Yet, through a blind love of everything foreign, the upper classes in Tiflis have begun to build their houses in the Western style.

The Georgians of the Kura basin, like their Imerian, Mingrelian, and Laz kindred, fully deserve the reputation for physical beauty which they enjoy. They have the same abundant black hair, large eyes, white teeth, delicate complexion, lithe figures, small hands, that distinguish their western neighbours. Yet the appearance especially of their women, who mostly paint, can scarcely be described as prepossessing. They are cold and unattractive, their features lacking the animated expression and bright smile which intellectual development might be expected to have produced. Most of the Georgians have a high, almost flushed complexion, due doubtless to excessive indulgence in wine, of which they are ever ready to take copious draughts in honour of their friends, generally with the Tatar words, *Allah Verdi*, "the gift of God!" The Kakhetians especially, proud of their excellent vintages, consume large quantities, and before the ravages of the oïdium, the usual allowance of the field labourers was here about half a gallon daily. This fiery wine, some of which might compare favourably with the best produced in Europe, is mostly consumed in the country, and one of the most familiar sights in Kakhetia is the well-filled ox or pig skins hanging at the doors of the shops, or crossing the country in waggon-loads. In order to preserve the pliancy of the skins the natives have the horrible practice of flaying the beasts alive, and then smearing the hides with naphtha. This imparts a disagreeable flavour to the liquor, to which, however, even strangers soon get accustomed.

Notwithstanding the fertility of the land and relatively sparse population, the peasantry of the Kura basin are generally poor, owning little beyond a few mangy cattle and sheep, whose wool looks almost like hair. Like the Mingrelians and Imerians, though to a less extent, the Georgians have suffered from the feudal system. However, since 1864 and 1866 they have at least ceased to be attached to the glebe, and serfdom has been abolished in Transcaucasia, as elsewhere throughout the empire. But the nobles, who have remained large proprietors, have not all of them yet lost the habit of treating the peasantry as beasts of burden, while practices

IMERIAN TYPES AND COSTUMES—GROUP OF DANCERS.

begotten of slavery in the people themselves have not yet disappeared. They are for the most part uncleanly and listless, though their naturally cheerful, social, and upright disposition is gradually asserting itself. They are said to be rather less intelligent than the Caucasian races, and in the schools show less quickness than their Tatar and Armenian neighbours in mastering foreign languages and the sciences, though this may be partly due to the fact that the latter are mainly townsfolk, while the former are a rural population. Theft is a crime almost unknown in the Georgian and Armenian communities, the few cases of larceny that come before the Tiflis courts being mostly committed by strangers. At the same time many are addicted to contraband habits. Nor does their national legislator, King Vakhtang, seem to have entertained any high opinion of their general uprightness. "I have drawn up this code," he writes, "but in Georgia no just sentence has ever yet been, nor ever will be, pronounced." Yet, however barbarous may have been the former Government, it remained for the Russians to introduce corporal punishment of the most degrading form.

One of the most remarkable traits of the Georgian race is their love of song and the dance. They have no great musical talent, and their language, with its numerous gutturals and sibilants, is scarcely adapted to melody. Yet none the less do they keep up an incessant chant all day long, accompanying themselves with the *daïra*, or tambourine, and the *balalaïka*, a sort of three-stringed guitar. Some will, so to say, adapt every movement to musical rhythm, and while weeding their maize-fields or engaged in other field work, the men dispose themselves in groups, singing in various sets snatches of verse suitable to the work in hand. As they advance the chorus becomes more vigorous, and their measured movements more rapid. At the end of the furrow they stop short, shift their places, and in retracing their steps renew the interrupted burden of their song. Despotic masters from gloomy Russia attempted in vain to impose silence on their Transcaucasian labourers. Unaccompanied by the glad music of the voice, the daily task hung heavy on their hands.

Custom has also given force of law to numerous feast-days analogous to the old holidays of "Merry England." On foot, on horseback, or in their ramshackle carts the whole population flocks to the scene, indicated from afar by some venerable church or cluster of oak-trees, and here the song, the dance, trade, revelry, and religious rites all follow in rapid succession. Worship is itself performed with a sort of blind rapture. Pilgrims present themselves before the priest to have the iron collar removed, with which they had symbolized their temporary thraldom to the patron saint; and when released they immolate to his honour the ram or the bull, which afterwards supplies the banquet. Frequently some fair white-robed "spouse of the white George" will cast herself at the feet of the faithful, who must either step on her prostrate body or leap over it to reach the hallowed shrine. The Armenians, and even the Moslem Tatars, come to trade, are at times carried away by the religious frenzy, and join in the chorus and Christian rites. To the sacred succeed the profane dances, which often assume the appearance of a free fight, the victors seizing the girdles of the vanquished, enveloping themselves in

the ample folds of their *bûrkas*, or donning their imposing *papashes*. Formerly the sham fights held in the streets of Tiflis in commemoration of the expulsion of the Persians ended in regular battles, often accompanied by loss of life.

The Khevsurs, Pshavs, and Tûshes.

As in the west, so in East Georgia, the ethnical picture is completed by a group of highlanders, who had till recently maintained their independence in their inaccessible upland retreats. On the one hand are the already described Svans, on the other their Khevsur, Pshav, and Tûsh neighbours. The highest eastern valleys about Mount Borbalo have afforded a refuge to fugitives of diverse race and speech, who, amidst these secluded upland snows and pastures, have gradually acquired, if not an independent type, at least a distinct physiognomy. Chechenzes, Lezghians, Georgians, and, according to tradition, even Jews have entered into the composition of these tribes, although the chief ethnical element is no doubt the Georgian from the south, whose presence is also shown by the prevailing Christian practices. Nevertheless the predominant speech on the northern slopes is of Chechenz origin.

Mount Borbalo is no less remarkable as an ethnological than as a water parting. Eastward stretches the Tûsh district, watered by the two head-streams of the Koïsu of Andi; on the south the Alazan of Kakhetia, apart from a few Tûshes, is mainly occupied by Georgians; on the south-west the sources of the Yora and Eastern Aragva rise in the Pshav territory; while the Khevsurs, or "People of the Gorges," dwell in the west and north-west, on both slopes of the central range, though it is impossible to assign definite limits to all these peoples.* They frequently shift their quarters, following their flocks to fresh pastures assigned to them by custom, or acquired by the fortunes of war.

The Pshavs, who reach farthest down, or about the altitude of 3,300 feet, thus abutting on the Southern Georgians, are the most civilised of these highlanders, and speak a Georgian dialect. They have greatly increased in numbers since the pacification of the land has enabled them to bring their produce to the Tiflis market. The Tûshes, though less numerous and pent up in their rugged valleys everywhere enclosed by snowy mountains, are said to be the most industrious and intelligent of all the hillmen in this part of the Caucasus. Most of the men, being obliged, like the Savoyards, to emigrate for half the year, bring back from the lowland populations larger ideas and more enterprising habits. Many have even acquired a considerable amount of instruction, besides several foreign languages. Their own is an extremely rude dialect, poor in vowels, abounding in consonants, with no less than nine sibilants and eight gutturals, one of which combines so inti-

* Population of Upland Borbalo valleys in 1876, according to Seidlitz:—

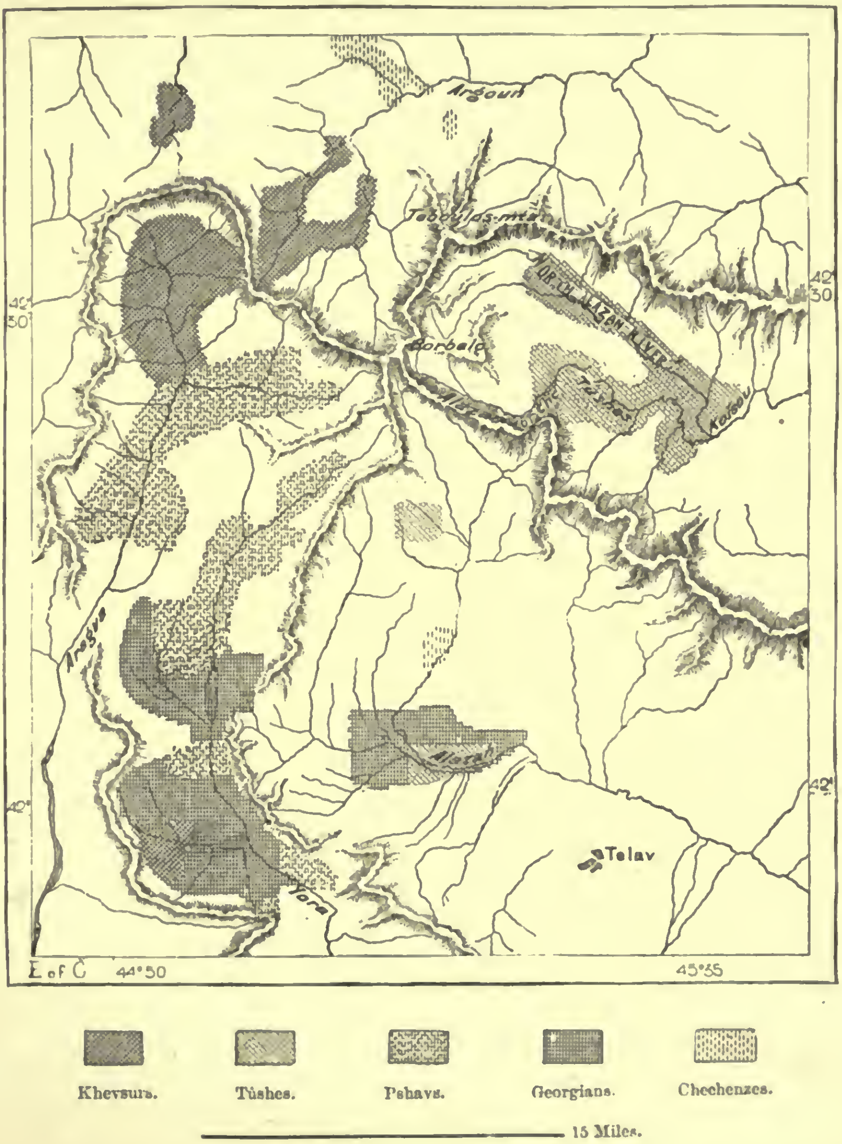
Pshavs	8,150
Khevsurs	6,900
Tûshes	5,050
Total	20,100

mately with the preceding or following consonants that special signs had to be invented to represent the combined letters.

The Khevsurs, completely isolated from each other during the winter by the main range, are still in a very rude and almost barbarous state, although in some

Fig. 57.—The Khevsur, Tûsh, and Pshav Lands.

Scale 1 : 850,000.



respects one of the most remarkable people in Asia. Generally of a lighter brown complexion than the Tûshes, they are evidently a very mixed race, varying considerably in stature, features, colour of hair and eyes, and in the shape of the cranium. Most of them have a savage aspect; some are extremely thin, like

walking skeletons with miraculously animated Death's heads on their shoulders, and with large hands and feet, out of all proportion with the rest of the body. From the surroundings they have acquired muscles of steel, enabling them, even when heavily burdened, to scale the steepest cliffs, and often returning across the snows and rocks from Vladikavkaz with a hundredweight of salt on their backs.

Some of the still surviving Khevsur and Pshav customs resemble those of many Red Indian and African wild tribes. Thus the wife is confined in an isolated hut, round which the husband prowls, encouraging her to support the pains of labour with volleys of musketry. After the delivery young girls steal to the place at dawn or dusk with bread, milk, cheese, and other comforts, the mother remaining for a month in her retreat, which is burnt after her departure. The father is congratulated on the birth of a son, and feasts are prepared at his expense, but of which he may not partake. The struggle for existence in this unproductive land has introduced many practices calculated to limit the number of children to three; but infanticide does not prevail as it formerly did amongst the Svans. The Khevsurs show great affection for their offspring, though forbidden by custom to caress them in public. The boys are generally named after some wild animal—Bear, Lion, Wolf, Panther, &c., emblems of their future valour, while the girls receive such tender names as Rose, Pearl, Bright-one, Daughter of the Sun, Little Sun, Sun of my Heart, &c.

Most of the marriages are arranged by the parents while the children are yet in "long clothes." Nevertheless a formal abduction is still practised, and after the wedding and attendant rejoicings, the young couple avoid being seen together for weeks and months. Yet divorce is frequent, and the example of the Mohammedans has even introduced polygamy in several Khevsur families. The funeral rites are not practised with the same rigour as formerly, when none were allowed to die under a roof, but compelled to close their eyes in face of sun or stars, and mingle their last breath with the winds. In presence of the body the relatives at first feigned to rejoice, but tears and wailings soon followed, accompanied by mournful songs for the departed.

The Khevsurs are very proud of their Christianity, which is certainly of an original type. Their chief divinity is the God of War, and amongst their other gods and angels are the Mother of the Earth, the Angel of the Oak, and the Archangel of Property. They keep the Friday like the Mohammedans, abstain from pork, worship the sacred trees, offer sacrifices to the genii of earth and air. They have priests whose duties are to examine the sick, sprinkle the victim's blood over the people, proclaim the future, prepare the sacred beer, and these dignitaries end by becoming possessed of all the precious stones, old medals, and chased silver vases in the country. The Khevsurs are also, perhaps, the only people in the world who still use armour, coats of mail, arm-pieces, and helmets like those of mediæval knights, and formerly general amongst all the Caucasian tribes. Down to the close of the last century the Chechenz Ingushes still wore the shield and coats of mail. The traveller is often startled by the sight of these armed

KHEVSUR IN ARMOUR.

warriors, who look like lineal descendants of the Crusaders, but whom the law of vendetta alone compels to go about thus cased in iron. All who have to execute or fear an act of vengeance appear abroad with all their offensive and defensive arms, including the terrible spiked gauntlet, which has left its mark on the features of most of the natives.

The Tatars, Talishes, Slavs, and Germans.

Although far less numerous than the Georgians in the Kura basin, the Tatars still occupy nearly all its eastern section below Tiflis. In several districts they are grouped in compact masses of a far purer type than their kinsmen, the Western Osmanli. By the Byzantines and Arabs they were all confused, under the general name of Khazars, with the peoples at that time predominating on the banks of the Don and Volga. Although presenting every variety of type from the coarsest to the noblest, they are in general scarcely less symmetrical than their Georgian neighbours, while harbouring, under a serious and solemn expression, moral qualities not found in other Caucasian races. Those who have preserved their freedom are remarkably sincere, upright, and hospitable, generally very industrious, and superior to their neighbours as stock-breeders, agriculturists, gardeners, and artisans. They are often even better instructed than the Russians themselves, for most of them can read, while many write Turkish very correctly, and some show themselves familiar with Arabic and Persian.

In some respects the Tatars are the civilising element in Caucasia, for their language, the Tûrki of Azerbeijan, is the general medium of intercourse between the various tribes, so that all the natives are commonly comprised under the collective name of Tatars. Amongst them are some representatives of the Kumans and other warlike invaders of Southern Europe, and they could not fail to have acquired a decisive influence in the country, but for a certain apathy of character which has caused them to fall into the hands of Armenian speculators and money-lenders. In their habits those of the Lower Kura, Shirvan, and Baku approach nearer to the Persians than to the Turks. They seldom practise polygamy, and their women generally work freely with unveiled face. On the whole they are remarkably tolerant, nor does the Shiah sect take advantage of its decided ascendancy to persecute either the Sunnite Mohammedans or their Christian neighbours. In some mixed villages the mayors are chosen alternately from the Armenians and Tatars, and even on the Persian frontier the Christians assist at the Shiah celebrations. Thus at Shusha the funeral processions in honour of Hassan and Hussein are escorted by mounted Cossacks, and attended by military bands. Yet the fanatical actors often bewail those martyrs of the Prophet's family by self-inflicted tortures of a most atrocious description, slashing their heads with knives until they are bathed in gore, burying wooden pegs in their skull, attaching iron clasps to the cheek bones and nostrils, confining the shoulders between two sharp swords which pierce the skin at every step, or loading the arms, breast, and loins with chains and amulets fastened by means of iron hooks

sunk into the flesh. The unhappy victims often fall from exhaustion or loss of blood, while the dervishes and priests continue to excite the populace with songs, prayers, and shouts.

In certain eastern districts dwell the Tats, also zealous Shiah sectaries, descendants of the former Persian rulers of the country, and whose name is synonymous with that of Tajik, current throughout Turkestan. They are found in compact groups about Baku, and as far north as Kuba. Most of the Lenkoran district, on the Persian frontier, is also occupied by an Iranian people known as Talishes, who have long dwelt in a semi-barbarous state in the secluded region between the highlands and the swamps of the Lower Kura. Their language is not a Persian dialect, but an independent parallel development, showing a certain affinity to the Afghan. Next to the Georgians and the Tatars, these Tats and Talish Iranians occupy the widest ethnical area in Caucasia, although outnumbered by the Armenians, who are grouped in the towns, and especially in Tiflis. Besides all these races there are a few Mongol tribes in the Lower Kura basin, survivors of the old invaders, who live more or less intermingled with the Tatars along the left bank of the Alazan between Signakh and Zakatali. The hilly district overlooking Tiflis on the west is occupied by some Osses, and even Greeks, invited hither to replace the Tatars in 1829. Lastly, the settled population of Eastern Transcaucasia is completed by several Russian and German colonists, some banished, others voluntary emigrants to this region.

The Russian nonconformists, compelled in 1838 and subsequent years to settle in Transcaucasia, are mostly Molokanes—that is, "Feeders on Milk"—or Dukhobortzi—that is, "Wrestlers in Spirit"—from Taurida. Thanks to their co-operative habits, both are far more prosperous than their Tatar or Georgian neighbours, though in many respects inferior to other Slav colonists. The Germans who, like the Russian dissidents, have also settled near Tiflis and Yelizavetpol, live entirely aloof from the surrounding populations, and by their agricultural skill have converted into gardens the lands conceded to them when they migrated in 1817 from Würtemberg. These Suabian colonists seem, in the course of two generations, to have become remarkably modified under the influence of the physical surroundings. Although they have contracted no alliances with their Georgian, Armenian, or Tatar neighbours, they no longer resemble their kinsmen in the fatherland, most of them being now distinguished by dark hair, black eyes, oval and regular features, graceful and lithe figures.

Topography.

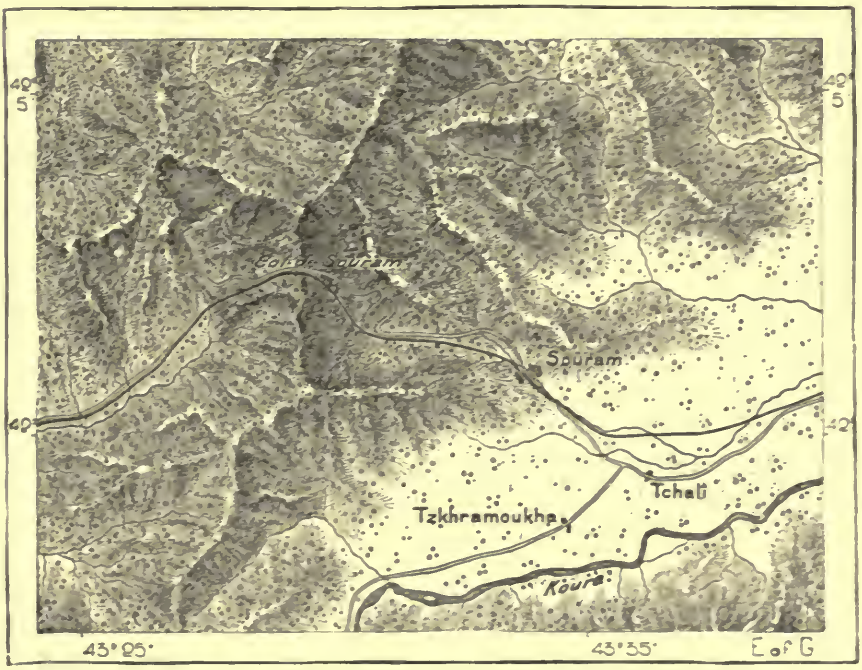
The highest town in the Kura basin is *Ardahan*, a stronghold situated in a fertile cirque at the southern foot of the bluff surmounted by the fortress of Ramazan. By its capture in 1877 the Russians became masters of the more important passes leading towards the Chorukh and Araxis valleys. But eastwards Ardahan still remains unconnected by easy routes with the rest of Transcaucasia, the volcanic region here traversed by the Kura opposing great obstacles to trade.

One of the river gorges below Ardahan encloses the celebrated convent of Vardzia, or Vardzish—that is, "Castle of Roses"—entirely excavated in the soft tufa, which is here regularly stratified with layers of black scoria. The underground town contains innumerable cells disposed in stories, and connected by galleries edging the precipice 200 feet above the Kura. The larger spaces form either chapels, where are still to be seen the remains of frescoes, or the so-called summer and winter palaces of Queen Tamara.

East of these defiles stands the important fortress of *Akalkalaki*, on an exposed but fertile plateau 5,630 feet above sea-level. *Akiska*, or Akhaltzik—that is, "New

Fig. 58.—The Suram Pass and Mesk Mountains.

Scale 1 : 210,000.



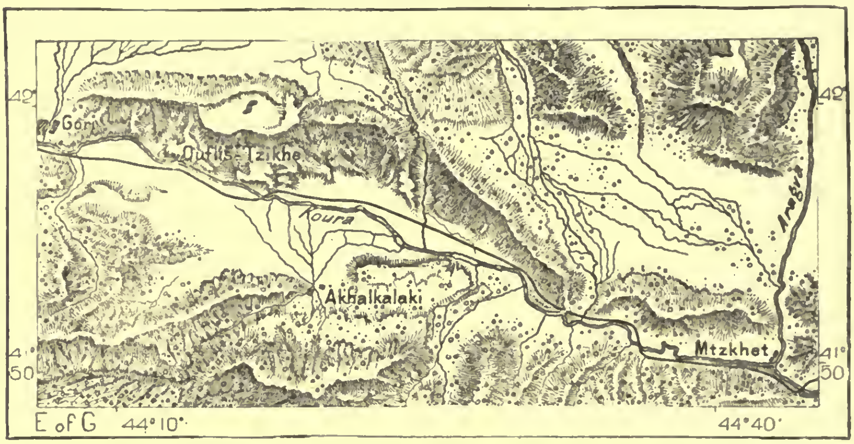
Fort"—which was the old Turkish town of Ak-hissar, or "White Fort," is also an important military town, commanding several of the frontier routes, and in peaceful times the centre of a considerable trade, since the emigration of the Turks chiefly occupied by Armenians, with about a thousand Jews. The old mosque of its citadel, now a church, is one of the finest monuments in Caucasia. The district abounds in hot springs, amongst which those of Aspinza below Vardzia, and Abbas-Tuman to the north-west, attract numerous bathers to one of the most umbrageous and romantic valleys in this region. Descending from Akhaltzik towards Tiflis by the banks of the Kura, we reach the magnificent gorge, whose entrance is guarded by the pleasant watering-place of *Borjom*, 2,665 feet above sea-level.

This is the summer resort of the wealthy classes from Tiflis, and the ruined buildings interspersed amongst the modern palaces and villas show that it was a large centre of population even before the sixteenth century. Here the air is pure and fresh, water flows in abundance, and every eminence is clothed with forests in which the ibex and wild goat are still hunted.

Suram, though small in size, is a busy town, well known to travellers as a resting-place on the route and railway between Poti and Tiflis. It is commanded by a strong castle, which, according to the legend, the owner endeavoured to render impregnable by laying the foundation stone on the only son of a widow. Suram stands at the western extremity of the Karthalian plain, a dried-up lake whose bed is now extremely fertile. The temporary railway at present crossing the Suram

Fig. 59.—The Kura Valley between Gori and Mtzkhet.

From the Map of the Russian Staff. Scale 1 : 500,000.



9 Miles.

Hills will probably be ultimately replaced by another running farther south, and piercing the Mesk range by a tunnel in the vicinity of Borjom.

Gori, capital of the district, and ethnological centre of Georgia, stands as nearly as possible in the middle of the old lacustrine basin, not far from the junction of the Kura, Lakhva, and Mejuda, of which the two latter streams descend from the country of the Osses. Gori is happily situated in a fertile and well-watered district at the foot of a bluff crowned by an old citadel. The wheat of this district is the best in Transcaucasia, and its wines are used in Tiflis for tempering the more fiery vintages of Kakhetia. On a tertiary rock of molasse formation, 5 miles east of Gori, lies the troglodytic town of Uflis-tzikhe, no less remarkable than the convent of Vardzia, and much more accessible to visitors by the railway from Tiflis. The rock, some 660 feet high, consists of strata of varying hardness, carved, sculptured, and excavated from base to summit, so as to present the appearance of a pyramidal group of buildings. These Uflis grottoes were probably at first inhabited by

barbarous troglodytes; but their successors were acquainted with the arts and comforts of life, and in these underground chambers are found the remains of Greek, Roman, Arab, and Byzantine architecture.

Mtzkhet, standing at the outlet of the old Lake of Karthalia, though now an insignificant village, was the residence of the Georgian kings in the fourth and fifth centuries. It occupies a vital position at the junction of the main routes from the Darial defile through the Aragva valley, and from the Caspian and Euxine through the Kura and Rion basins. Hence after its destruction the new capital of Georgia and of all Caucasia was founded in the same neighbourhood, but removed, about a thousand years ago, some 13 miles farther south, to avoid the dangerous proximity of the Osses. The piles of a bridge thrown across the Kura in 1841 are said to rest on Roman foundations dating from the time of Pompey. But more interesting are the ruins of the cathedral founded by King Mirian in 328, and since then frequently restored.

Tiflis, capital of Caucasia and the largest city in Asiatic Russia, was a mere hamlet on the banks of the Kura till the fifth century, when the seat of Government was transferred hither from Mtzkhet. The Georgian term Tiflis, Tphilis, or Tphilis-Kalaki, means "Hot Town," doubtless in reference to the sulphur spring rising near the Kura, amidst the porphyries and schists of the Tsavkissi fissure. Yet the name might be equally well applied to it from the sultry summer heat reflected by the bare rocks of the surrounding heights on the basin enclosing the city at an elevation of 1,220 feet above the sea. Nothing is visible in every direction except the slopes of hills or yellow and grey schistous mountains stripped of the forests formerly covering them, and even of the vegetable humus carried away by the winds and rains. The Russians have recently endeavoured to restore these forests, but they have succeeded only in the ravines, on the flats and islands watered by the Kura. Above the quarter where stood the old town, the monotonous uniformity of the rocky landscape is broken by ramparts, bastions, and crumbling towers, while the banks of the Kura present a picturesque view with their three bridges, hanging galleries, low many-coloured housetops, and churches flanked by belfries terminating with octagonal pyramids. Nevertheless the general aspect of the place is not cheerful, the grey tones of the brick and wood work contributing to produce a depressing effect on the traveller. In 1874 nearly half of the houses were still roofed with earth, giving them the appearance of huts, and forming a strange contrast with the grand edifices in their midst. North-west of the old town stretch the regular streets of the new quarter, flanked by heavy buildings, churches, barracks, palaces, in the ultra-Caucasian Russian style. A broad boulevard, much frequented after sunset, vies in the splendour of its warehouses with those of the great European capitals. The town is also constantly spreading northwards, especially round about the Poti railway terminus, along the left bank of the Kura, and in the direction of Mtzkhet.

In its motley population Tiflis is the worthy capital of the Caucasian regions. Although lying within the ethnological limits of Georgia, it is not in a special sense a Georgian city, and even in 1803 of 2,700 houses four only belonged to families

of that nation. The Armenians, constituting one-third of the inhabitants, are the most numerous element, while neither Russians nor Georgians amount to one-fifth, and even amongst the latter must be included the Imerian and Mingrelian "hewers of wood and drawers of water." * A large number of the people are unmarried immigrants, temporary residents raising the male population to about two-thirds of the whole, and partly accounting for the prevailing depravity noticed by all travellers. The bazaars are largely frequented and well stocked with arms, carpets, silks, English or Russian cottons, Paris fancy goods, and other wares. The skilful Armenian jewellers produce various articles of an original type. The baths form another centre of social activity, especially for the Russian, Armenian, and Georgian ladies, who here occupy themselves with the pleasures of the toilet. The city has no remarkable monuments, but possesses a rich natural-history collection, and in the governor's palace may be seen a fine plan in relief of the Caucasus range. Amongst the numerous learned associations noteworthy is the Geographical Society, which is attached to that of St. Petersburg, and has published valuable documents on Caucasian geography and ethnography. Another institution has been formed to collect the old manuscripts of the Transcaucasian languages.

During the oppressive summer heats the parks, pleasure grounds, and botanic gardens in the neighbourhood are frequented by thousands, glad to escape from the close and foul air of the narrow streets. The officials and wealthy traders now also flock to the villas and hostelries of the surrounding uplands. The chief "Sanitorium" is *Kojòr*, whose houses are scattered at an elevation of from 4,400 to 5,000 feet along the slopes of a mountain commanding the Tiflis basin, and where the Georgian kings had also their summer residence. Here are the remains of some ancient forests, and Manglis, Beliy-Klûch, and other more remote retreats in the heart of the hills are still surrounded by extensive woodlands. The numerous alabaster quarries of this district supply the gypsum required by the Tiflis builders. Farther south volcanoes pierced by craters and furrowed by crevasses have accumulated vast terraces of lava above the fertile Somkhet district, which is watered by an affluent of the Kura. This country was long the domain of the Orbeliani, a princely family of Chinese origin, who some twenty-three centuries ago settled here as conquerors, followed by Eastern retainers of all races. Various ruins still testify to the former power of the Orbeliani in this region.

On one of the numerous streams to the south-west of Tiflis stands the famous Shamkhor column, already mentioned by Abulfeda in the thirteenth century. This finely proportioned minaret, with its pedestal, frieze, capital, and terminal piece, is 180 feet high; but it is in a very bad state of repair, already inclining from the

* Population of Tiflis in 1876 according to nationalities :—

Armenians	37,308	Poles	1,592
Georgians of all branches	21,623	Jews	1,145
Russians	19,574	Greeks	388
Germans	2,005	Osses	293
Tatars and Turks	2,310	French	267
Persians	1,692	Sundries	1,354

In boarding-houses, barracks, hospitals, and prisons, 14,473. Of these 66,147 are males, 37,877 females.

A STREET IN TIFLIS.

perpendicular, and the Kufic inscription on the frieze is no longer legible. It dates probably from the ninth century. The basin of the Shamkhor, which flows by the village of like name, is the most important in Caucasia for its mineral wealth. In a cirque in these porphyry mountains, at an elevation of 5,000 feet, are situated the Kedabek works for reducing the copper ores extracted from the neighbouring mines. This establishment, purchased in 1863 by some German engineers, gives

Fig. 60.—Tiflis.
Scale 1 : 36,000.

1,080 Yards.

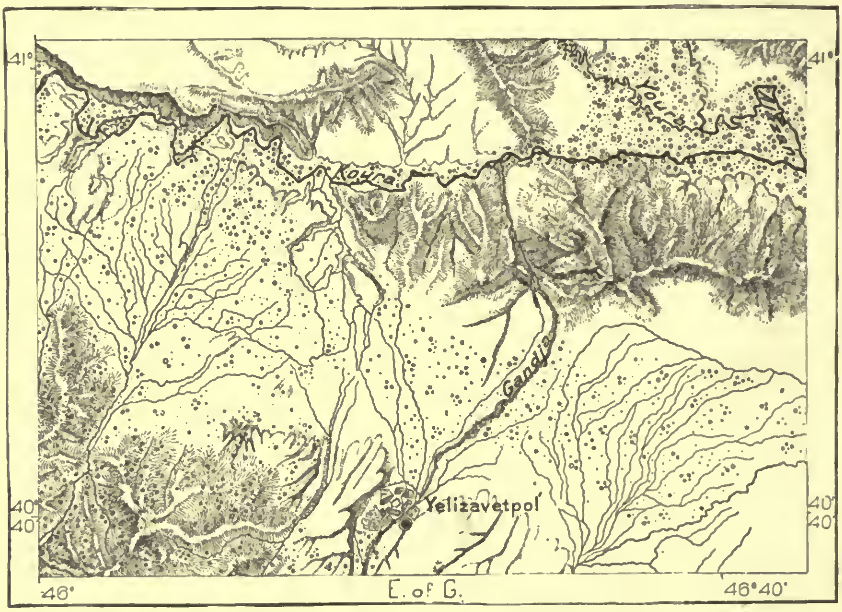
constant employment to 1,000 Persian, Armenian, Tatar, and Greek workmen, and works up, on an average, from 8,000 to 10,000 tons of ore with about 6 per cent. of metal, partly purchased by the Government for the artillery service. It has developed quite a network of railways, and disposes of about 35,000 acres of forests and pastures, and one of the shafts has already been sunk to a depth of nearly 2,000 feet. Near Soglik, in the same basin, are some alum deposits, as rich as those

of Tolfa, near Civita Vecchia, and covering an area of over 12 square miles. These mines have been worked since the time of the Romans, as shown by numerous remains found on the spot. Iron and cobalt are also worked in this part of the Yelizavetpol district.

Some 120 miles south-east of Tiflis lies the old city of *Ganja*, formerly capital of a khanate of like name, and now renamed Yelizavetpol, as capital of the Russian province of Yelizavetpol. It existed in the eleventh century, but some miles from its present site, where are still to be seen the ruins of the old place, popularly attributed to Alexander the Great, who never visited the Kura basin. A little farther south-east stood *Partav*, the old capital of the kingdom of Agvania, or

Fig. 61.—Yelizavetpol and Vicinity.

From the Map of the Russian Staff. Scale 1 : 600,000.



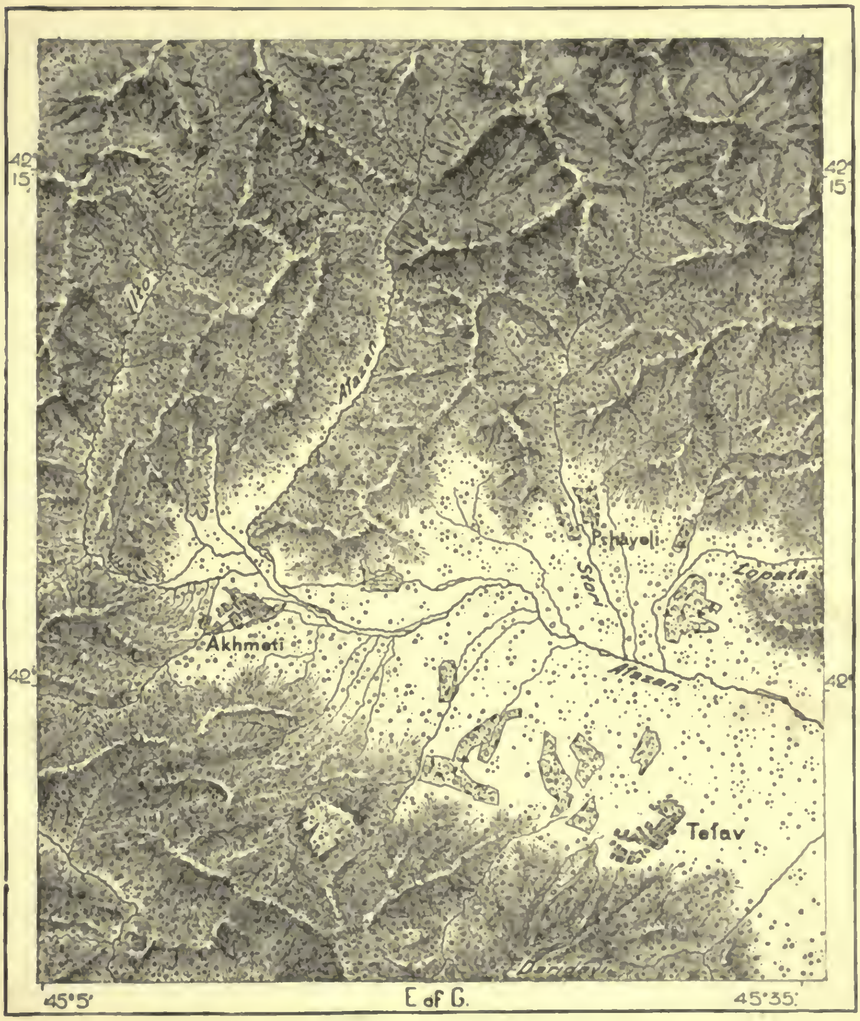
12 Miles.

Albania, in the district watered by the Terter above its junction with the Kura. Partav was destroyed in the tenth century, according to the Arab historians, by "Rûssi" adventurers from beyond the Caucasus, and its site is now indicated by the village of Barda, or Berdaya. This region was certainly far more densely peopled formerly than at present, and Yelizavetpol itself, rebuilt in the sixteenth century on its present site, was evidently a considerable place, as shown by its extensive ruins and the fine Persian mosque erected here by Shah Abbas. Most of its windowless houses are built of a hardened clay, which is very durable in this dry climate, but which, with the ruins, contributes to give the place an appearance of great age. With its fine plantations it covers a large area, some 12 miles in circumference; yet it is so unhealthy that the officials are all obliged to remove in

summer to the banks of the romantic "Blue Lake" (Gök-göl), to Helenendorf, and Haji-Kend, near the wooded hills of the south. Yelizavetpol is even noted for a local endemic, the so-called *godovik*, or "yearly leprosy," so named because it lasts about one year in defiance of all remedies. This loathsome disease is probably due

Fig. 62.—THE TELAV BASIN.

From the Map of the Russian Staff. Scale 1 : 400,000.



24 Miles.

to the twenty-two cemeteries close to the town, mingling their contents with the numerous irrigating rills from the river Ganja, whose waters are often absorbed in this way before reaching the Kura. The skilful horticulture of its Tatar, Suabian, and Slav inhabitants has brought the fruits of this district to great perfection, and its cherries especially are the finest in Caucasia. They also occupy themselves with

the cultivation of tobacco, cotton, sericulture, spinning, and weaving, while the trade of Yelizavetpol is chiefly in the hands of the Armenians.

Shusha, the largest town in this government, is also peopled by Armenians and Tatars. Standing 3,500 feet above the sea on an augite porphyry terrace enclosed by an amphitheatre of hills, its climate is one of the severest in Caucasia, while its flag-paved streets, stone houses, fortified buildings, towers, and posterns give it the

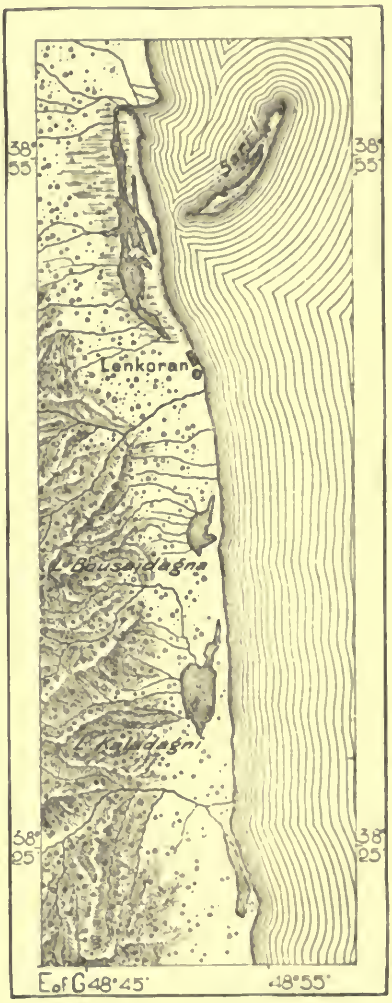
Fig. 63.—Baku and Cape Bail-Burni.

aspect of a mediæval European town. Its Armenian traders, who deal chiefly in silk, have extensive relations with Tiflis, Moscow, and Marseilles.

Telar, capital of Kakhetia, and in the eleventh century the residence of a "King of Kings," is now merely a picturesque village, standing with its ruined forts on the summit of a bluff overlooking the Alazan valley. Yet it has a considerable wine trade, and but for its inconvenient situation might possibly recover some of its former importance. *Signakh*, also commanding the Alazan valley from an eminence

2,600 feet high, was originally a fortress and "place of refuge," as indicated by its Tatar name, but has gradually become a thriving commercial town, with a preponderating Armenian population. *Nukha*, at the foot of the Great Caucasus, is peopled chiefly by Tatars engaged mostly in sericulture and silk-weaving. Here the Khan Hussein built a strong fortress in 1765, which encloses an extremely handsome palace in Persian style. It does a large export trade in raw silk, and since the ravages of the silk disease in the European nurseries it is yearly visited by hundreds of French and Italian buyers.

Fig. 64.—Lenkoran.
From the Map of the Russian Staff.
Scale 1 : 600,000.



12 Miles.

Shamakhi, the Shemakha of the Russians, capital of the old province of Shirvan, and formerly the largest city in Transcaucasia, was said to have had a population of 100,000 in the seventeenth century. But it has suffered much from earthquakes, and still more from the hand of man, having been wasted first by Peter the Great, and then by Nadir Shah. Yet ever since the removal of the seat of Government to Baku it has remained the most populous place in the province. It is chiefly engaged in wool-spinning, dyeing, and weaving carpets in the Persian style, said to be the best and most durable in all Asia, and surpassing even those of the French looms in beauty of design, richness of colour, and cheapness. Its seedless pomegranates are also famous throughout the East.

Baku, the present capital of the eastern province of Transcaucasia, exhibits quite an Asiatic appearance, with its low flat-roofed houses, tall minarets and palace of its former khans. Close to the blue waters of its bay stands the so-called "Maiden's Tower," a truncated cone, originally, doubtless, a watch-tower, but now used as a lighthouse. But being otherwise destitute of monuments, the dirty, irregular, and dusty town of Baku, and centre of the naphtha trade, possesses no importance except as the Caspian seaport of all Transcaucasia. In its deep and sheltered roadstead at least fifty vessels are always anchored, some in 20 feet of water within a few yards of the shore, and although still unconnected by rail either with Stavropol or Tiflis, it has the largest trade of any Caspian port except Astrakhan. But it has scarcely any industries, and even all the naphtha and

petroleum refining works are carried on at Balakhani and Mashtagi, in the neighbourhood of the "fire springs."

Salyani, or Salyan, the chief town of the Kura delta, and standing near its apex, derives considerable importance from its productive fisheries and horticulture. *Lenkoran*, or Lenkorud, a maritime town near the Persian frontier, lacks the natural advantages of Baku; for although its Tatar name means "roadstead," it is greatly exposed to the winds and surf, and its shipping is obliged to cast anchor about 2 miles from the coast. The Mard-ab, or "Dead Waters," of the surrounding district also render its climate very unhealthy. In these swampy grounds multitudes of ducks and other aquatic birds are taken by the net, and the cultivation of rice, together with a rich Indian flora, has been introduced by the Hindu traders.

South of Lenkoran stands the equally inconvenient and insalubrious little port of *Astara*, at the mouth of a river of like name, which here marks the frontier of the Russian and Persian Empires. From Persia, Astara imports dried fruits, gall nuts, and raw cotton, in exchange for cotton stuffs, iron and copper ware, and samovars. It has a yearly trade of nearly 1,000,000 roubles.

VII.—RUSSIAN ARMENIA.

ARARAT, ALAGOZ, PLATEAU OF LAKE GOK-CHAI, AND ARAXIS BAS

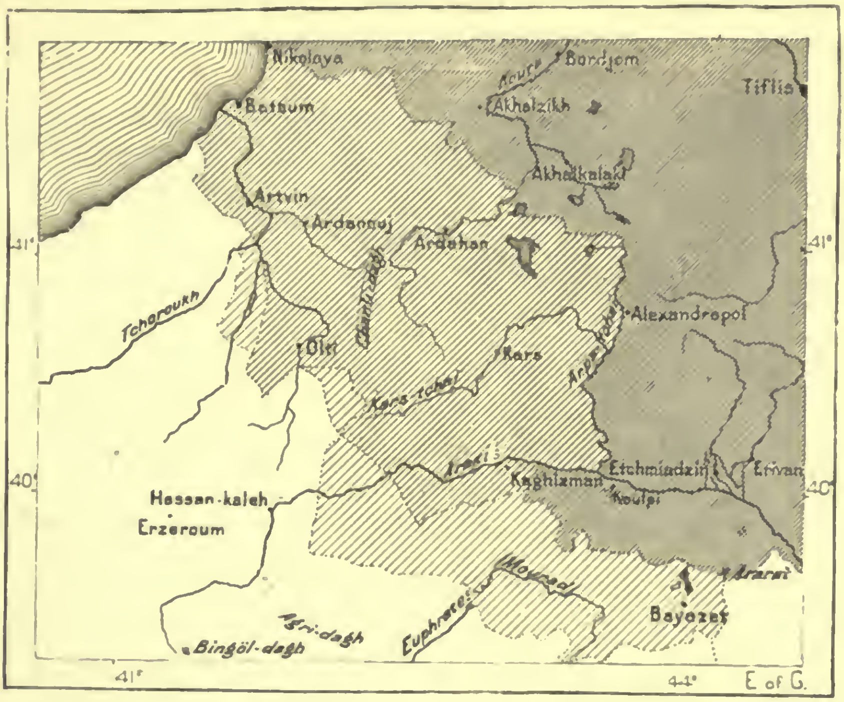
The Araxis basin presents on the whole a marked geographical unity, forming, north of the Iranian tableland, a broad semicircular zone, with its convex side facing southwards, and everywhere enclosed by lofty mountains, except near the Caspian, where the hills fall towards the alluvial plains of the Kura and Araxis. Neither of these rivers forms a uniform ethnological domain, for Armenians, Georgians, and Tatars dwell on the banks of the former, while the Araxis valley is occupied by Armenians, Kurds, and other Tatar peoples. Still the Armenians everywhere preponderate not only in culture and influence, but also in numbers. Politically also the Araxis basin is divided between the three converging states, the region of all the head-streams belonging to Turkey, and most of the right bank of the main stream to Persia, while more than half of the whole basin, including the best strategical points for a descent on the Euphrates valley, are now Russian territory. Russia is thus mistress of the famous Mount Ararat, and of the convent of Echmiadzin, the religious capital of the Armenians, and centre of their nationality.

Orography—Ararat—Ala-göz.

North of the sources of the Araxis the mountains sloping northwards towards the Euxine are cut up by ravines and glens into irregular chains and spurs, such as the Kirechli, Soghanli, and Childir-dagh, which, north of the Kars basin, merge in the lacustrine plateau bordered eastwards by the Abul and Samsar volcanoes. Although presenting serious obstacles to intercommunication, none of these ranges

attain the altitude of the Caucasus and Anti-Caucasus, the highest summit being the Kizil-dagh, or "Red Mountain," between the Kars basin and Lake Childir, which is only 10,460 feet, and consequently below the normal snow-line. South of the region of the Araxis head-streams the highlands become narrower, but more elevated, here forming a single parting range running east and west between the Araxis and Euphrates or Murad valleys, with several extinct craters over 10,000 feet high, and culminating with the Perli-dagh in the centre, and the Chingil,

Fig. 65.—Recent Russian Conquests.
Scale 1 : 3,500,000.



Ceded by the treaty of St. Stefano. — Annexed in 1878. — Transcaucasia before the War.

60 Miles.

near the eastern pass leading from Erivan to Bayazid, both about 10,830 feet above the sea.

Several streamlets flowing to the Araxis indicate, by their name of Tuzla-su, the nature of their waters, which spring from extensive salt beds. North of the Perli-dagh stands Mount Kulpi, one of the largest masses of rock-salt in the world, rising on a tertiary plain near the point where the Araxis passes through a narrow basalt gorge above its junction with the Arpa-chai. The surrounding hills, destitute of vegetation, and composed of red, blue, green, or grey marls, impart to

the landscape a most motley appearance. The Kulpi salt mines, which are confined to a central layer from 100 to 210 feet thick, have probably been longer worked than any other out of China. The Armenians tell us how Noah drew his supplies from this source, and even show the very spot where he began his mining operations. In the abandoned parts of the works hammers and other implements are frequently picked up, dating from the stone age. These objects are all made of diorite, a rock found nowhere in the district, and which must have been procured from distant countries. The mining operations are still carried on in a rude manner, and owing to the absence of roads, the produce is limited to the Tiflis and

Fig. 66.—Ararat.

From the Map of the Russian Staff. Scale 1 : 320,000.

Erivan markets. Between 1836 and 1876 the average yield has risen from 4,000 to 16,300 tons.

Ararat, "historical centre of the Armenian plateau," and central point of the line of tablelands stretching across the eastern hemisphere from the Cape of Good Hope to Bering Strait, rises above the eastern continuation of the volcanic chain running between the Araxis and the Euphrates. But its snowy crest towers to such a height above the surrounding mountains that they become dwarfed to mere hills, while the hilly plateaux seem to stretch like plains at its base. Its very name of Ararat, probably of Aramæan origin, is synonymous with supereminence, while its Armenian designation, Masis, is also said to mean "grand," or "sublime."

The Turks call it Agri-dagh, or "Steep Mountain," and the Persians Koh-i-Nuh, or "Noah's Mount." This superb mass, grander than the Hellenic Olympuses, naturally became a sacred object to the peoples of the plains, the mysterious summit whence men and animals descended to people the world. The Armenians show the very spot where Noah's ark grounded, and where it is still guarded by genii armed with flaming swords.*

Viewed from Nakhichevan, Ararat looks like a compact conic mass rising on the north-west horizon; but from Bayazid on the south, and Erivan on the north, it is seen to consist of two distinct mountains disposed in the direction of the Caucasus—Great Ararat, with a double peak in the north-west; Little Ararat, with a rounded crest in the south-east, and with a deep intervening depression. Both

Fig. 67.—Mount Ararat.

masses, with their counterforts, occupy an area of about 380 square miles between the plains of Bayazid and Erivan. Like those of Etna, their slopes are almost everywhere gently inclined, although the ascent is rendered very difficult lower down by occasional lava streams, and higher up by the snows, nearly always softened under the solar rays in summer. The Armenians speak of the prodigies by which too daring shepherds have ever been prevented from scaling the "Mother of the World," and the failures of Tournefort and Morier lent a colour to their statements. When Parrot at last scaled the highest crest in 1829, they unani-

* Elevations of the Araxis and neighbouring plains:—

	Feet.		Feet.
Great Ararat	16,760	Bayazid (citadel)	6,634
Little Ararat	11,680	Echmiadzin	2,810
Intermediate Col	8,785	Erivan	3,200

mously denied the truth of his account, and for a long time succeeded in casting a doubt on his veracity, until the exploit was repeated by other adventurers. In 1850 Khodzko passed five whole days on the summit in order to prosecute his work of triangulation in Caucasia. He passed thence south-east to Mount Salivan, 204 miles off, and north-west to Mount Elbruz, distant 264 miles, corresponding by means of heliotropic signals with the astronomers stationed on Mount Akh-dagh, in the centre of the Gok-chai plateau.

At an elevation of 11,600 feet, Ararat is still everywhere clothed with vegetation; but herbage ceases at 12,500 feet, while nothing occurs except an Alpine flora between 13,200 and 14,300, which marks the line of perpetual snow. The species of the Upper Ararat are all either identical with, or allied to, those of the Alps, but they are much less numerous, a fact doubtless due to the greater dryness of the atmosphere on the Armenian mountain. Its fauna also is comparatively very poor. The wolf, hyena, and perhaps the panther, haunt the thickets at its base about the Araxis; but higher up nothing is met except an ibex, a polecat, and a species of hare.

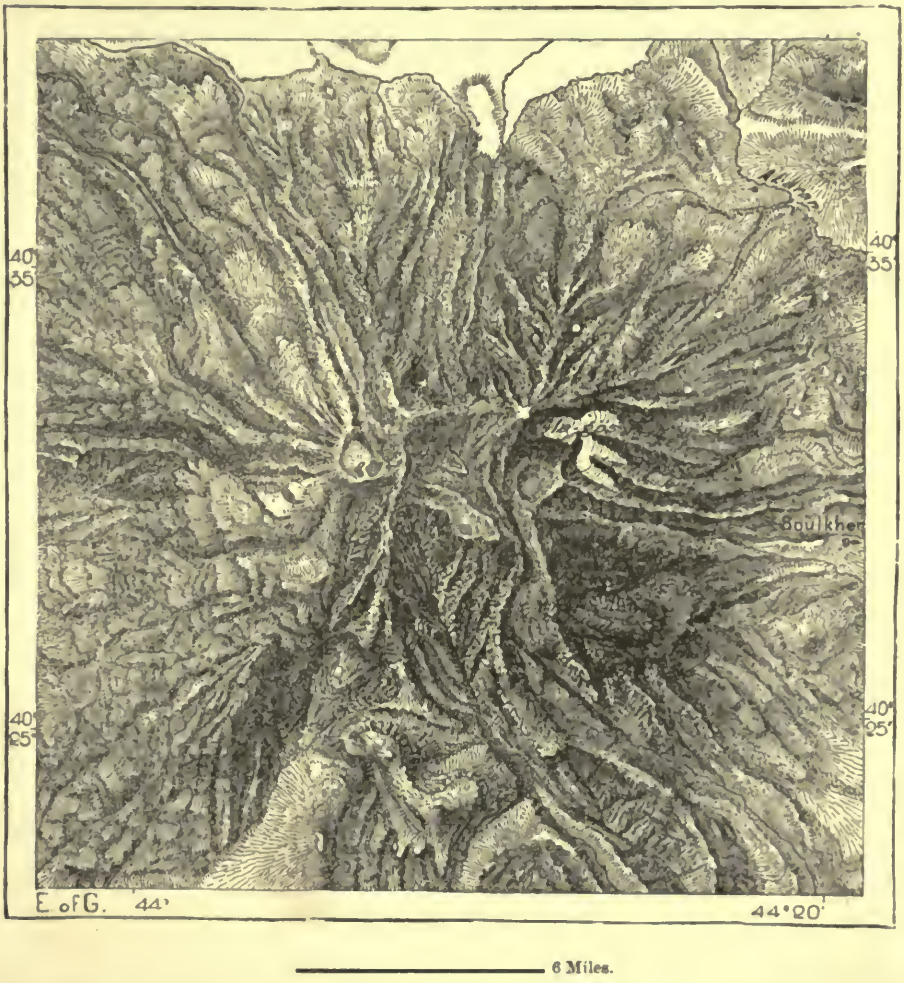
Although only 3° of latitude farther south than the Pyrenees, the lower slopes are free of snow much earlier, and the snow-line itself is about a mile lower down than on the Iberian range. Still the snow reaches much further down in the ravines of erosion by which its flanks are furrowed. In several gorges these snows become true glaciers, of which the chief is that of St. James, whose cirque has undoubtedly been formed by a former eruption analogous to that of the Val del Bove on Mongibello. In more remote times the glaciers reached much lower, as shown by the scored and polished surface of the trachite rocks.

Notwithstanding the vast quantity of snow lying on its slopes, Ararat is almost entirely destitute of water. Wagner failed to discover anything beyond two springs at its base, from which mere rills trickle away amongst the stones. Hence its sides remain arid and parched, while the neighbouring mountains, also of volcanic origin, discharge torrents numerous enough to form vast and deep lakes at their feet. During dry seasons Ararat becomes altogether uninhabitable, the want of shade and moisture driving away the flocks, and even the birds of the air. It is therefore probable that the water from the melting snows disappears in crevasses, or beneath the ashes and lavas, either collecting in underground lakes, or forming a network of hidden streams. These waters, transformed to steam by the subterraneous fires, may perhaps explain the terrible eruption of 1840, when an old crater above the convent of St. James suddenly reopened, ejecting a dense vapour far above the summit of Ararat, and diffusing sulphurous exhalations round about. The mountain groaned threateningly, casting up from the fissure vast quantities of stones and rocks, some weighing as much as 5 tons. Jets of steam escaped through numerous crevasses, and springs of hot water bubbled up from the bed of the Araxis. The convent itself disappeared beneath the débris, together with the rich and populous village of Arguri, supposed by the Armenians to be the oldest in the world, and to mark the spot where Noah planted the vine on leaving the ark. There perished on this occasion, besides the 2,000 inhabitants

of Arguri, several thousands at Erivan, Nakhichevan, and Bayazid, victims of the earthquake felt at those places. Four days afterwards a fresh disaster destroyed nearly all the land under cultivation about Arguri. The water and slush, collected in the crater partly from the melting snows, burst their barriers, overflowing in long streams of mud down the slopes, and converting the plain into a vast morass. The Arguri eruption is the only one mentioned in historic times, though Ararat

Fig. 68.—Ala-goz.

From the Map of the Russian Staff Scale 1 : 300,000.



has been the scene of frequent and violent earthquakes. The statement of Reineggs that he saw flames and smoke emitted from the summit in 1785 is more than doubtful, for the phenomenon was witnessed by none of the natives.

The Allah-ghöz, or rather Ala-göz ("Motley Mountain"), faces Ararat from the opposite side of the Erivan plain. It is a volcanic mass, with a truncated cone 13,900 feet high, but with its counterforts occupying a wider area than its

haughty rival. Its lava streams descend south and east towards the Araxis valley—west and north towards Alexandrapol, in the Arpa-chai basin. It takes its name from the diverse colours of its scoriæ, pumice, and obsidians, varied here and there with herbage and bright flowers. Three of the old craters now form as many small lakes, although but few streams reach the plains, the running waters gene-

Fig. 69.—Lake Gok-chai.

From the Map of the Russian Staff. Scale 1 : 1,000,000

18 Miles.

rally disappearing beneath the scoriæ, and feeding the Aïger-göl, a lake lying south of the mountain, and draining through the Kara-su to the Araxis.

Lake Gok-chai—The Karabagh—Flora and Fauna.

Isolated like Ararat, the Ala-göz is connected only by low ridges with the northern highlands. These run parallel with the Caucasus, and connect the volcanic chain of the Akhalkalaki plateau with the mountains overlooking Lake

Gok-chai, east of Erivan. These mountains—Somkhet, Pambak, and others from 8,000 to 10,000 feet high—stand on such an elevated plateau that the ridge is easily surmounted by passes approached by long and gently sloping inclines. The Eshek-Maidan Pass, on the trade route between Tiflis and Erivan, stands at an altitude of 7,230 feet at the north-west angle of a hilly plateau, where the intersection of the various axes of the Caucasus forms a labyrinth of chains radiating in all directions, although mainly running north-west and south-east, parallel with the Great Caucasus. The ridges maintain a mean uniform elevation, rising everywhere about 3,300 feet above the plateau forming their common base, although a few extinct cones attain a relative height of 5,000 feet, or about 13,330 above sea-level. This intersection of ridges of uniform elevation explains the formation of a vast lake filling a cavity in the plateau 6,440 feet above the Euxine, and in summer only discharging its waters through Zanga, south-west towards the Araxis. This is the Gok-chai, or "Blue Water," of the Tatars, and the Sevanga of the Armenians. Although 550 square miles in extent, or two and a half times larger than Lake Geneva, Chardin is the first European traveller who mentions it. The mean depth varies from 150 to 250 feet, but its waters, fresh in the northern section, slightly brackish in the south, harbour five species only of fish, including the trout and salmon, although these are so numerous that from 2,000 to 3,000 trout have been taken at one haul.

Fig. 70.—The Alapolarim Lava Streams.

From Dubois de Montpéreux Scale 1 : 506,000.

6 Miles.

The lake forms an irregular triangle, contracted towards the centre by two advancing headlands, and as it is everywhere encircled by grey and snowy mountains, the landscape presents on the whole a grand and solemn, though somewhat sombre aspect. The lava and porphyry slopes are perfectly bare down to the

water's edge, while of the old cities nothing now survives except crumbling masses, beneath which numerous coins have been found dating from the time of the Sassanides. The villages also lie hidden away in sheltered nooks, so that little is visible beyond a few hamlets half buried in the ground, and the so-called "Tombs of the Giants," numerous tumuli scattered over the plateau, which is under snow eight months in the year. Nearly all the cultivable land has long remained fallow, so that the country has again become a desert. Till recently no craft navigated the lake, which, notwithstanding the fierce storms sweeping down from the hills, is often ice-bound in winter. On a volcanic islet in the north-west corner stands the convent of Sevan, noted throughout Armenia since the ninth century. It would be hard to conceive a more forlorn place of exile than this bleak island of black rocks, whose inhabitants are condemned to silence except for four days in the year. But the villages of the neighbouring plateau have become convalescent retreats for the people of the unhealthy town of Erivan, where dangerous fevers are endemic.

East of the Gok-chai and its encircling volcanoes, conspicuous amongst which is the Alapolarim, the labyrinth of intersecting ranges is continued south-eastwards, under the collective name of Karabagh, the Rani of the Georgians. Although the ravines preserve their snows throughout the year, not more than three or four of the crests in this region rise above the snow-line. Such are the Gämish (12,460 feet), source of the Terter, the Kazangöl-dagh, and its southern neighbour, the Kapujish (12,380 feet), continued southwards towards the town of Ordubat by steep rugged hills crowned with peaks. South of these culminating points of Eastern Armenia, and beyond the gorge of the Araxis, rise other mountains of equal height, and similarly furrowed with snowy ravines. Between the chain commanded by Mount Kapudish and the Shusha Mountains lies the Zangezûr basin, at a mean elevation of 4,000 feet, apparently an old lacustrine depression, like the Gok-chai, whose waters have been drawn off by the Bergushet and Akera Rivers, which unite before reaching the Araxis valley. In the centre of this basin the conic Ishikli, or Kachal-dagh, rises to a height of over 10,000 feet, and the scoriæ and ashes ejected by the surrounding volcanoes have been accumulated on the bed of the old lake to a thickness of several hundred yards, since deeply furrowed by torrents.

The flora of these highlands bears a remarkable resemblance to that of the European Alpine regions. Here are the same beeches, oaks, aspens, undergrowth, and flowering plants. The upland valleys, covered with a thick layer of black loam, are very fertile, whence probably the name of Karabagh, or "Black Garden," by which this country is known. But on the arid slopes, with the thermometer at 104° Fahr. during the summer months, little grows beyond the wild sage and other aromatic plants, while the fauna is chiefly represented by reptiles, scorpions, and formidable tarantolos (*Phalangium araneoides*). The Karabagh horses, however, which climb the cliffs like goats, are said to be the finest in Transcaucasia.

The Araxis Basin.

The Araxis, or Aras, pre-eminently the Armenian river, rises beyond Russian territory to the south of Erzerûm, and receives its first tributaries from the Bingöl-dagh volcano, the "Mountain of the Thousand Streams," some of which flow southwards to the Euphrates. After entering Russian Transcaucasia its still feeble volume is doubled by the junction of the Arpa-chai, or Akhurean, descending from the volcanic plateaux of Alexandrapol and the Ala-göz. Thanks to this supply, it is enabled to contribute largely to the irrigation of the Erivan basin, which would else become a desert waste. Diverted southwards by the Gok-chai and Karabagh highlands, it escapes from the old lacustrine bed through a narrow rocky gorge with falls from 200 to 270 feet broad, where its seething waters descend between steep rugged cliffs at an average rate of 15 feet in 1,000 yards, falling at one point as much as 45 feet in the same distance. Ordubat, above the Arasbar gorge, is still 3,090 feet above the Caspian, yet within 60 miles of this place the river has already reached the lowlands. After receiving the Bergushet it sweeps round the southern base of the Diri-dagh, beyond which it is joined by several torrents from the Persian highlands, ultimately joining the Kura after a course of about 470 miles. At the Diri-dagh it is crossed by the Khûdaferîn Bridge, attributed traditionally to Pompey, but which is certainly of more recent date. Higher up are the ruins of another bridge, referred by the natives to Alexander the Great, but which may well be a Roman structure. Below that of Khûdaferîn there are no other bridges, and here the former hydraulic works and irrigation canals have been mostly abandoned, so that instead of promoting the fertility of the steppe, they combine with the swamps of the Kura to render this tract of the Caspian seaboard all but uninhabitable. The Araxis is said to be showing a tendency to trend more to the right, and again separate itself from the Kura, and flow independently to the sea, as in the time of Strabo.

The Araxis basin is exposed to greater extremes of temperature than most regions in Western Asia. The climate of Erivan is even more severe than that of Tiflis, the temperature falling in winter to —20° Fahr., and rising in summer to 104° and even 110° Fahr. Hence the frequency of malignant fevers and other epidemics in Erivan. "In Tiflis," says the Armenian, "the young are not to be distinguished from the old; in Erivan the living are no better than the dead." Fortunately during the summer heats the Erivan plain is swept at nightfall by a cool north or north-west wind, blowing fiercely from the Ala-göz highlands. It generally begins to blow about five P.M. and lasts the greater part of the night, but is accompanied by such clouds of dust, and even sand, that the inhabitants are confined to their houses during its prevalence. All the poplars in the neighbourhood of Erivan are slightly inclined toward the south-east.

These pyramidal poplars are a conspicuous feature of the landscape in the Araxis basin. But a more remarkable plant is the *nölbönd*, a species of elm, whose leafy branches form a vast canopy of foliage absolutely impenetrable to the solar rays. Although one of the finest ornamental trees in the world, it is found

nowhere beyond the limits of Russian Armenia. The apricot grows in all the gardens, and rice, cotton, and sesame are also cultivated, besides a vine producing a strong wine of a brown colour, somewhat like sherry or madeira. But this vine has to be buried underground in winter, and regularly watered in summer. In this climate everything perishes, and the ground becomes baked like burnt clay, except where the irrigating channels convert the desert to a green oasis. The former irrigation works were all developed by the Persians, and an English engineer now proposes to distribute the waters of the Arpa-chai over the desert plains of Sardarabad. Meantime field operations are carried on in the most primitive fashion. Although skilful traders, the Armenians are bad agriculturists, but scarcely worse than their Tatar neighbours. In several districts the land is also exposed to the ravages of wild boars, which haunt the brushwood and sedgy banks of the Lower Araxis. Yet the zealous Tatars hold these unclean beasts in such horror that they will neither soil their hands by pursuing them themselves, nor allow others to interfere with them.

Inhabitants—The Armenians.

The chief nation in the Araxis basin, numerically the fourth in Caucasia, and second to the Russians alone in influence, are the Armenians, or Haï, Haïk, or Haikan, as they call themselves. The term Armenia, of Aramæan origin and probably meaning "highlands," is extremely vague, and applied in a general way to all the region of plateaux overlooked by Ararat. Armenia proper, or Hayasdan—that is, land of the Haïk—has shifted its borders from century to century with the political vicissitudes and migrations of the race. At present it comprises most of the Araxis basin, a large portion of the Kura valley, all the Upper Euphrates basin as far as the junction of the two main head-streams, the shores of Lake Van, and a few isolated tracts in Persia about Lake Urumiyah. The centre of gravity of the nation has been gradually removed northwards from the neighbourhood of Lake Van and the Eastern Euphrates valley, where a village still bears the national name of Haïk. But from all parts of the globe the scattered fragments of the people turn their eyes towards Ararat and the plains of the Araxis as their true fatherland. Here they are still found in the most compact and homogeneous masses, and here the Armenian tongue is spoken in the greatest purity, approaching nearest to the old language still employed in the churches, but which has ceased to be current since the close of the fourteenth century.

At the time of the Russian conquest in 1828—30, about 130,000 Armenians of Persia and Turkey migrated to the Araxis and Kura valleys, here replacing the Kurds and Tatars, who in their turn took refuge in the lands that had remained in the power of the Mohammedans. During the war of 1877-8 a similar cross migration took place. The districts of Ardahan in the Upper Kura valley, and of Kars in the Araxis basin, lost the greater part of their Mussulman inhabitants, receiving in their stead a multitude of Armenians from the Upper Euphrates, the

ARMENIAN TYPES AND COSTUMES.

Chorukh, and especially from the tract ceded to Russia by the treaty of St. Stefano, but restored to Turkey by the Congress of Berlin. These national movements were doubtless attended by a frightful loss of life, and even now religious and racial hatred gives rise to terrible tragedies. But the populations have, on the whole, been grouped more in conformity with their natural affinities.

Hitherto no reliable estimate has been formed of the number of Armenians in Asia Minor under Moslem rule, but they are probably less numerous than those subject to Russia.* The whole nation, usually estimated at three and even four millions, would seem scarcely to exceed two millions, of whom no less than 200,000 reside in Constantinople. Tiflis, the second Armenian city in numerical importance, lies also beyond the limits of Armenia proper, and the same is true of several other Transcaucasian towns in which the Armenian element preponderates.

Deprived for centuries of all political unity and national independence, the Armenians have been scattered over the Eastern world since the days of Herodotus, who met them in Babylon. When their country fell a prey to foreign conquerors they preferred to become "strangers amongst strangers than remain slaves in their native land." They migrated in multitudes, and since the eleventh century have been settled in Russia, Poland, Bukovina, and Galicia. At present they are found in all the large emporiums of trade from London to Singapore and Shanghae, everywhere distinguished by their commercial enterprise. They have often been compared with the Jews, whom they certainly equal in religious tenacity, spirit of fellowship, mercantile instincts, and commercial skill. But they are less adventurous, and whereas individual Jews have penetrated to the ends of the earth, sustaining alone the struggle for existence, the Armenians seldom advance except in compact groups. The majority of the nation have also remained in their original homes, where they are far from showing the same aversion as do the Jews to agricultural pursuits. In several districts of Transcaucasia all the peasantry are of Armenian stock, and in some of their villages in the Karabagh district they are occupied temporarily as masons or carpenters, pursuits which the Jews are never found engaged in.

Nevertheless the Semitic element probably entered largely into the formation of the Haïk race, for numerous migrations and even transportations in mass have taken place from Palestine to Armenia. The Haïks may in a general way be regarded as Aryans closely allied to the Persians; but during the incessant wars, conquests, and migrations of the last four thousand years they have become mingled with all the neighbouring peoples, and especially with the Jews, multitudes of whom were removed by the Assyrian kings to the Armenian highlands. The Bagratides, the most famous royal race that has ruled over Hayasdan and Georgia, even claim

* Probable number of Armenians in the world:—

Caucasia and European Russia	840,000
Asiatic Turkey	760,000
Persia	150,000
European Turkey	250,000
Elsewhere	60,000
Total	2,060,000

to be descended from David of Israel. Amongst the other foreign elements said to have exercised a considerable influence on the nation, mention is made of the Manigonian tribe, introduced in the third century of the new era into Somkhet, in Armenia, by a prince of Jenasdan—that is, of China. But the chroniclers show clearly that most of these foreigners, arriving, like the Normans and Varangians, as warriors and mercenaries, were in fact Iranians, probably allied to the Tajiks of the Oxus basin.

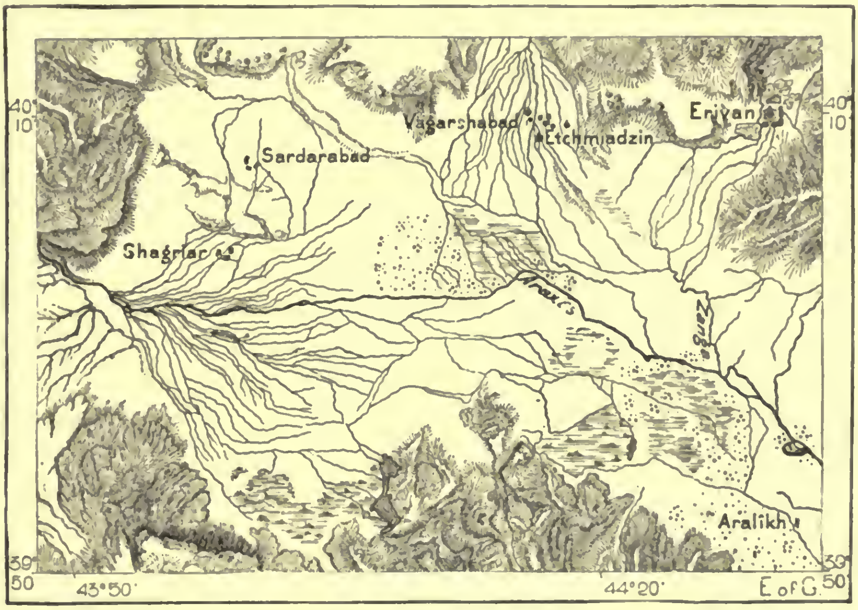
The Armenian language is included by all philologists in the Aryan family. Its affinities are chiefly with the Bactrian ("Zend"), its syntax is completely Iranian, and its vocabulary greatly resembles the Greek and Slavonic. Although very harsh and abounding in consonants, it rivals the Hellenic in its wealth of words and grammatical forms, as well as in its flexible structure and unlimited power of word-building. Still the numerous modern varieties have borrowed largely from Turkish and Georgian, and the speech current in the Lower Araxis basin is a veritable jargon, in which the Tatar element at times prevails over the Haïkan, while in Shirvan numerous Armenian communities have forgotten their mother tongue as completely as have the more distant settlements in Bukovina and Transylvania. In the convent of Echmiadzin, where it is spoken in its purest form, it still remains a purely Iranian dialect, whose origin and development are well illustrated in a local literature, continued uninterruptedly over a period of two thousand years. Rock inscriptions in the cuneiform character occur in the Van district. Other Haïkan documents are extant in Persian and Greek letters, and in the flourishing literary period (fifth century A.D.), when three hundred schools were open in the country, the peculiar alphabet now in use was introduced. The people still show a great love of instruction; schools are supported in all the communes; and the villagers have often to contend either with the Russian Government, or with the clergy, jealous of the influence exercised by their teachers. The scientific and literary movement has become very active, and in proportion to their numbers the Armenians probably print more books than any other people in the empire. To the former theological, historical, metaphysical, and grammatical works are now added translations of foreign masterpieces, and even in Anatolia are found close students of French literature. In 1854 about twenty-two Armenian presses were at work in Europe and Asia, issuing periodicals in Tiflis, Constantinople, and other towns, and publishing the old monuments of the language, especially in Moscow, Vienna, Paris, and Venice. The most famous establishment of this sort abroad is the convent founded in 1717 by the monk Mekhitar, or the "Consoler," in the island of San Lazzaro, near Venice. Here are published many valuable documents, and in the library are preserved some rare Oriental manuscripts.

The Mekhitarists, like most of the communities residing beyond the limits of Transcaucasia and Turkey, belong to the United Armenian rite, in union with the Roman Church, while preserving some of their traditional practices. But the bulk of the nation in the Euphrates and Araxis valleys have remained faithful to the old Orthodox cult. The dogmatic differences dividing the nation into two hostile religious sects turn chiefly on the nature of Christ, hell, and purgatory, the authority of the councils, the ecclesiastical hierarchy, and sundry rites. But

beneath the outward teaching of both forms are preserved numerous symbols dating from still older religions. The Armenian was the first nation converted in mass by Gregory the "Illuminator," about the beginning of the fourth century. But while changing its deities, it lost few of its traditions, and modified its worship very gradually. The sacred fire is even still commemorated, as in the days of Zoroaster. On the annual feast a recently married couple consume in a copper basin the richest fruits of the earth, flowers of all sorts, ears of corn, the vine and laurel branches. On all important occasions the people turn towards the sun as if to seek for aid from that source. During the great feasts bulls or rams crowned with wreaths and decorated with lighted candles are led into the churches or under

Fig. 71.—Araxis and Zanga Basin.

From the Map of the Russian Staff. Scale 1 : 600,000.



the sacred trees, and afterwards sacrificed with songs and prayers—evidently the sacrifice of Mithra bequeathed by the old to the new religion.

The "Katholicos," or spiritual head of the nation, derives his power from the possession of a precious relic, the right hand of the martyred Gregory. Chosen by the dignitaries of Echmiadzin when not designated by his predecessor, he is obeyed by all his co-religionists of the Gregorian rite; he names the bishops, who are nearly always selected from the monkish communities; and he addresses the Patriarchs of Constantinople and Jerusalem as a superior. Hence the extreme importance attached by the Russian Government to the possession of Ararat and the sacred convent of Echmiadzin. By seizing this strip of territory, so renowned throughout the East, the Muscovites have at the same time secured the spiritual ruler of over 2,000,000 human beings. The St. Petersburg authorities, who usually view with scant favour all religions antagonistic to the Orthodox Greek,

have accordingly been careful to treat the Katholicos with the greatest respect, thus acquiring a sort of protective right over all the Armenians settled in Turkey. On several occasions excessive zeal for the "Russification" of all the inhabitants of the empire has doubtless led to acts of violence and oppression even in Armenia. But the caprice of governors and political dreams do not prevent the Armenians from, on the whole, exercising a considerable influence in the empire—an influence due to their knowledge of languages, to their tact, often even to their intriguing spirit and adroitness in gaining access to the bureaucratic circle. They have long enjoyed a large share in the government at Constantinople, and they have already begun to play a part in St. Petersburg analogous to that often exercised by wily Italians at the French courts. Even in Transcaucasia they are gradually taking possession of the soil, and constantly encroaching on their Tatar neighbours.

Fig. 72.—Armenian Woman.

The Armenians of Russian Transcaucasia differ little in their physique from the Georgians, except that their features are generally rounder, their neck shorter and thicker. Many are inclined to obesity, probably from their sedentary habits. With fine heads of brown hair, large, black, and languid eyes, they seem to be of a gentle and almost melancholy temperament. Yet they do not lack valour in resisting attacks, as shown by the Seven Years' War of Independence, which they sustained in the beginning of the eighteenth century against the Persians in the Karabagh highlands, and since then in many local revolts against the Turks. Though they do not go about armed with an assortment of pistols and daggers, like the Georgians of the Rion basin, they have contrived far better to preserve their liberties, and have never fallen under the hard yoke of serfdom, which has been the lot of most of their neighbours. Notwithstanding the prevailing ignorance, they betray a remarkable degree of intelligence and aptitude, especially in the acquisition of languages. It has been said that "the intelligence of the Georgians is only in their looks, whereas that of the Armenians is in their head." But on the whole they seem to take life too seriously, and are somewhat indifferent to the charms of poetry, although they have produced some good poets even in recent

times. Their favourite studies are theology, metaphysics, and philology, and their influence has been chiefly felt in the more solid walks of literature. Fragments of Eusebius, Philo, Chrysostomus, and other Greek fathers, which were supposed to have been irrevocably lost, have been found in old Armenian translations by the Mekhitarists of Venice and Vienna.

In most places the Armenians keep themselves aloof from the surrounding populations, generally forming distinct trading communities, and in the Tatar and Georgian towns rendering themselves no less indispensable, hated, and despised than the Jews in East Europe and Germany. But popular feeling is of little consequence to men living quite apart in the seclusion of the family circle, where they still practise patriarchal habits. The grandfather commands—children, sons-in-law, and grandchildren obey. The wife, condemned to silence till the birth of her first child, wears round her neck and the lower part of her face a thick bandage concealing the mouth, and obliging her to converse in signs like a dumb creature. Even after childbirth she speaks only in a low voice till advanced in years, but undertakes all the household duties till the marriage of a sister-in-law. Strangers are rarely welcomed into the domestic circle, and many villages might be traversed without suspecting them to be inhabited, so completely are dwellings and gardens walled off from the outer world.

The Tatars of the Lower Araxis valley differ in no respects from the Tûrki tribes of the Kura basin. Here also are found a few Gipsies, besides some Kurdish herdsmen, mostly temporary immigrants from Persian and Turkish Kurdistan. Amongst them are several hundred Yezides, regarded by all their neighbours with a sort of horror as devil-worshippers. The sedentary Kurds are numerous only in the Zangezûr district, south-east of the Gok-chai, where they number about 13,000, mostly assimilated in dress, and often even in speech, to the Tatars.

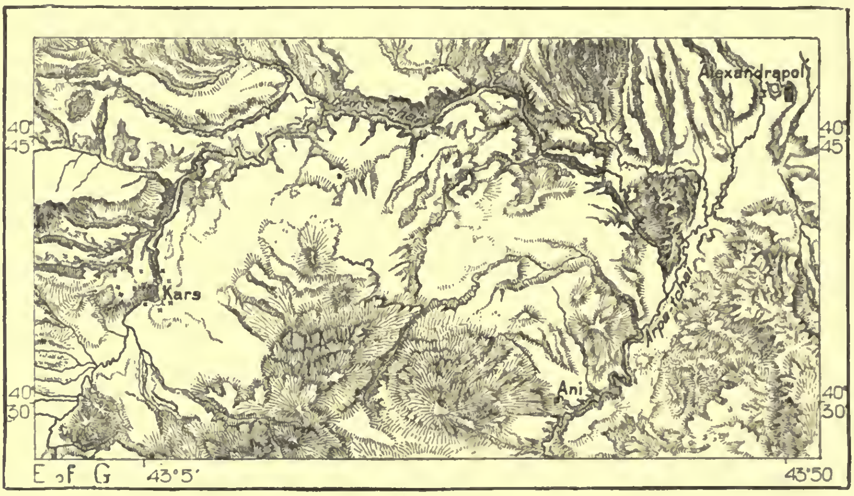
Topography.

The chief town of the Upper Araxis valley is *Kaghizman*, pleasantly situated in the midst of trailing vines, cherry, apricot, peach, and other fruit trees. In the same district, but on a tributary of the main stream, lies the capital of Upper Russian Armenia, the celebrated city and fortress of *Kars*, thrice conquered from the Turks in 1828, 1855, and 1877, and definitely ceded to Russia in 1878. Even before the Russo-Turkish wars it had often been exposed to attack. Capital of an Armenian kingdom during the ninth and tenth centuries, it was sacked by Tamerlane, by Amurat III., and again by the Persians, its strategical importance constantly attracting the attention of invaders. For it occupies a central position between the upper basins of the Kura, Araxis, Chorukh, and Euphrates, commanding all the mountain passes between those valleys. At this point the Kars-chai, confined in a narrow rocky bed, makes a double bend, first partly encircling the town, and then sweeping round the citadel. Built of lava blocks, and standing on a black basalt eminence, Kars could formerly defy the attacks of its assailants. But since the invention of artillery it was found necessary to fortify the surrounding heights, and during the late war the eleven detached forts

enclosing an entrenched camp formed a line of defence 11 miles in circumference. These forts, with their basalt and obsidian rocks, are the only attractions of a town which, although 6,150 feet above sea-level, enjoys a considerable trade.

A carriage road descending eastwards from the Kars-chai to the Arpa-chai valley connects Kars with *Alexandrapol*, a Russian stronghold whose fortifications have been continued almost uninterruptedly since 1837. At that time nothing existed here except the village of Gumrî, peopled by Armenian refugees. Situated near the east bank of the Arpa-chai, in a basin commanded on the south by the Ala-göz, and 1,330 feet lower down than Kars, Alexandrapol lies in a better-cultivated district, abundantly watered by the Arpa-chai. It succeeded to *Ani*, former residence of the Armenian Bagratides, which was destroyed by an earthquake in 1319, and whose extensive ruins still cover a triangular headland overlooking the right bank of the Arpa-chai. According to probably exaggerated

Fig. 73.—The Kars-chai Valley: Kars and Alexandrapol.
From the Map of the Russian Staff. Scale 1 : 800,000.



15 Miles.

accounts of the native chroniclers, Ani had at one time a population of 100,000, with 1,000 churches and other public buildings.

South-east of Ani is *Talish*, which also seems to have been an Armenian capital, the ruins of whose high walls and towers now afford shelter to a wretched hamlet. The whole of the Lower Arpa-chai valley is a land of ruins. To the west are the remains of *Pakaran*, or "Assembly of the Gods," and a little farther south those of two other capitals, *Erovantashad* and *Erovantagerd*, built successively by Erovan II. north of the Araxis and Arpa-chai confluence, and said to have formerly contained 30,000 Jewish and 20,000 Armenian houses. *Armavir*, also founded by the same king, has left but few remains on a hill overlooking the plain skirted by the Kara-su Canal, near the Araxis. Lastly, south of this river stands *Kara-Kaleh*, the "Black Castle," wrongly supposed by some to have been the ancient Tigranocertes, but still a most picturesque object perched on a frowning precipice,

with towers built of alternate rows of red porphyry and black lava, at whose feet rush the foaming waters of a mountain torrent.

Echmiadzin, the present religious capital of the Haïkans, lies to the west of Erivan, nearly in the middle of the plain. In the neighbourhood is the small town of *Vagarshabad*, but Echmiadzin itself is little more than a vast convent surrounded by a cob-wall, and commanded by a church with pyramidal belfry and side turrets. The lower story of the buildings is concealed by a plain quadrangular enclosure of dull grey walls, so that there is nothing to relieve the monotony of these heavy masses except the surrounding thicket of poplars and fruit trees, a few flower beds, and limpid streams. Yet this monastery, whose name means "the only son has descended," is the capital of the Armenian world. Here, according to the legend, the "Son of God" appeared to Gregory the Illuminator, and at one thunder-stroke hurled the pagan divinities beneath the earth. For here formerly stood Ardimet-Kaghat, the "City of Artemis," the "Armenian Venus," to whose shrine worshippers flocked from all quarters. The deities have changed, but for at least five-and-twenty centuries this has remained a hallowed spot. The library contains six hundred and thirty-five old manuscripts, and its printing-press, the oldest in Armenia proper, publishes a periodical and some popular works. One of the bells bears a Tibetan inscription with the famous mystic words, *om mani padmi hûm*, showing that at some unknown epoch Armenia must have had relations with the Buddhist world.

Erivan, capital of the chief government in Russian Armenia, and the second city of the Araxis valley, stands at the north-east angle of the old lacustrine basin traversed by the river, and on the banks of the Zanga, here diverted into a thousand irrigating rills. It is chiefly inhabited by Armenians, who have succeeded to the Tatars occupying it under the Persian rule. It holds an important commercial and strategical position at the entrance of the upper valley leading to Tiflis and the Kura basin over the Gök-chai plateau, and its fortress, perched on a columnar basalt cliff, has been the scene of many stirring events. Built mostly in the Persian style, it boasts of some picturesque structures, including a handsome mosque decorated with arabesques, and shaded with magnificent elms. The district, commanding a superb view of Ararat, is very fertile and well watered. But the wretched climate, with its violent changes of temperature, dust, and fevers, would soon depopulate the place, but for its extreme strategical importance on the Turko-Persian frontier and the rich rock-salt mines in the neighbourhood. In summer the Russian officials retire to Semonovka, Delijan, and other sanitaria among the surrounding hills. The copper mines of this region are no longer worked.

East of Erivan are the ruins of *Bash-Karni*, or Garni, another old capital, which the natives pretend was founded four thousand years ago, and which contains the remains of a Greek temple, probably dedicated to the Armenian Venus. But more remarkable than its ruins are its basalt columns, blue, green, red, and other igneous rocks, the scene of former eruptions, through which now foams a mountain stream. In the same wild and rugged region lies *Kegart*, Kergash, or Aïrivank, the "Convent of Hell," half of which is hollowed out of the tufa and lavas. In the centre of the plain, watered by the Karni-chai, stood *Artaxates*,

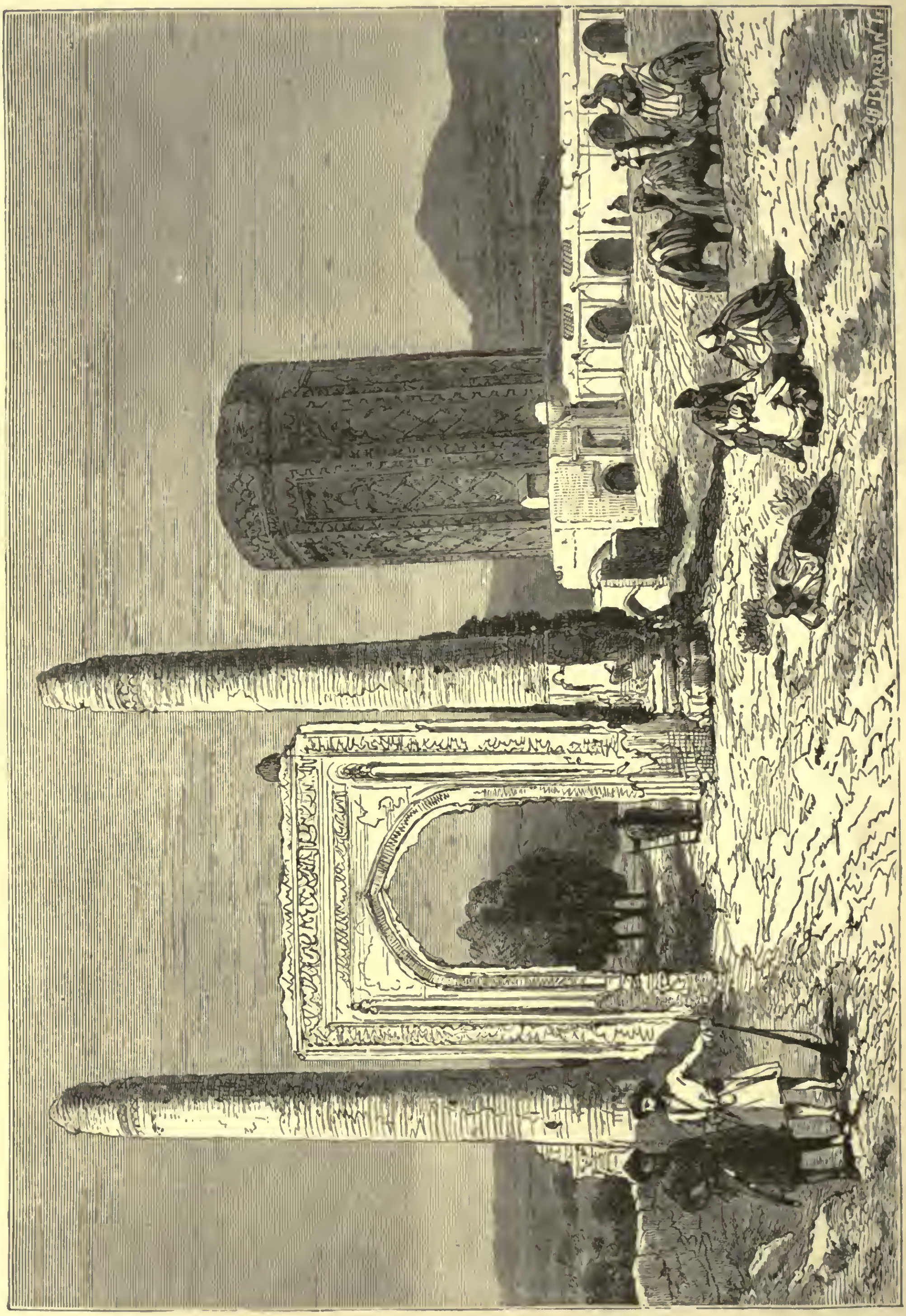


Fig. 74.—Nakhichevan.

built by Artaxias, General of Antiochus, on the plains of Hannibal, and which remained the capital of Armenia till destroyed by Corbulo in the reign of Nero.

TOWN OF GÍRÚSI.

It was succeeded by Neronia, which yielded later on to Vagarshabad, and was finally overthrown by Sapor II. in 370, when its 200,000 Armenian and Jewish inhabitants were put to the sword or carried captive into Persia.

Nakhichevan, or Nakhijevan, capital of the district stretching south-east of Ararat, is said to be even an older place than Echmiadzin, having been traditionally founded by Noah after planting the first vine on the slopes of Ararat. Its very name means the "First Dwelling," and a mound is shown in the neighbourhood in which Noah is supposed to be buried. The town, already mentioned by Pompey under the name of Naxuana, has been repeatedly rebuilt, and all the present houses are constructed of stones from previous ruins. The gateway of an old palace flanked by two brick minarets bears a Persian inscription surrounded by rich arabesques, and near it stands the "Tower of the Khans," a twelve-sided building bearing a long inscription with letters in relief. Nakhichevan is now inhabited chiefly by Tatars occupied with gardening and vine growing, and has been much reduced since the time of the Persian rule, when it had a population of 40,000. The district is well watered, and in the neighbouring hills are rich salt mines, worked since prehistoric times. The millstones, cut from a variegated sandstone, are highly esteemed throughout Armenia.

South-west of Nakhichevan is the frontier station of *Jufa*, on the banks of the Araxis, and facing an old Persian caravanserai, which is commanded by a stronghold perched on a red sandstone escarpment. At the beginning of the seventeenth century Jufa was the richest and most industrious place in Armenia, with a population of 40,000. But Shah Abbas the "Great" commanded the inhabitants to emigrate in mass to New Jufa, near Ispahan, those who lagged behind being thrown into the river, and the town burnt to the ground. Its most noteworthy remains are its ruined bridge and the tombs of its vast necropolis. In 1854 the population had dwindled to ten families living in a ruined caravanserai.

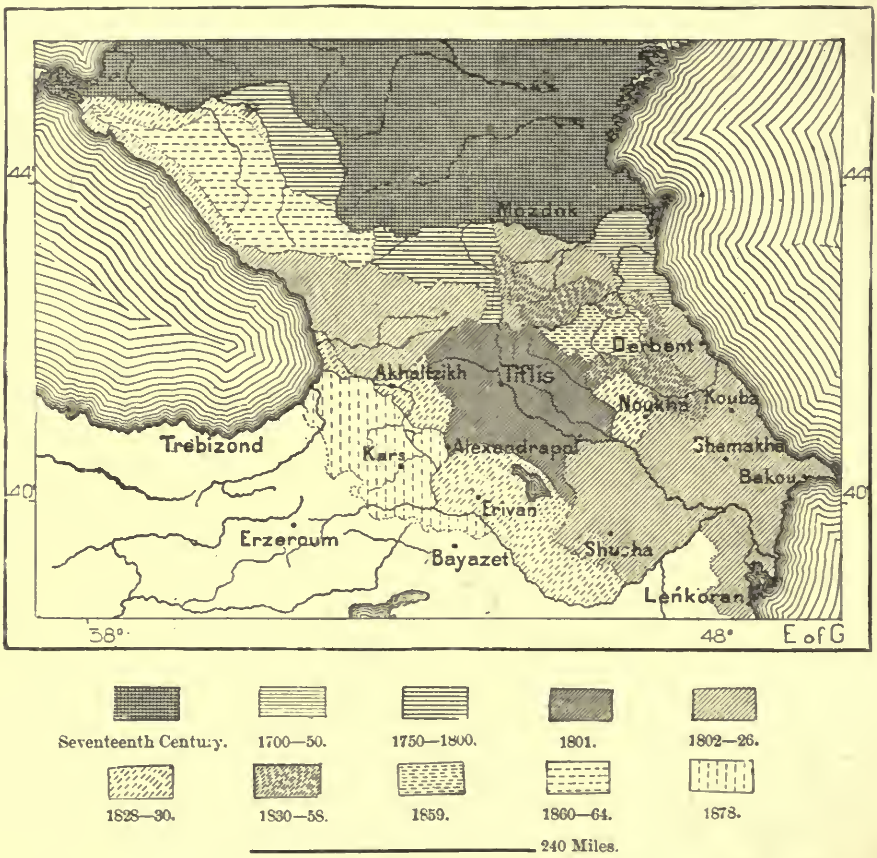
Ordubat stands on the Araxis, below Jufa, near the Migri Gorge, south of the Karabagh Mountains. It is the pleasantest place in Armenia, being in a fertile district watered by numerous streamlets and irrigation rills, and studded with villas scattered over the wooded heights of the neighbourhood. A few miles to the north-west is the thriving village of *Akulisi*, inhabited by wealthy Armenians. The copper mines of the surrounding hills yielded no more than 117 tons of pure metal in 1877.

The double basin of the Bergushet and Akera, between the Ordubat and Shusha Hills, comprises the administrative district of Zangezûr, and contains no towns, but several important villages peopled by Armenians, Tatars, and Kurds. The largest is *Khinzirak*, but the administrative capital is *Girûsi*, the Koriss of the Armenians; that is, the "Village of Pillars," so called from the "needles" of tufa rising above the slope of the terrace on which the village is situated. The flat-roofed houses are disposed in the form of a flight of steps, beneath which the inhabitants move about in underground streets. Other dwellings are excavated in the igneous scoria of the terrace, but the present village is a modern place 1,000 feet lower down than the old Girûsi. For a few weeks in summer it becomes a busy trading-place, when 50,000 nomads of the surrounding districts drive their flocks to the rich Zangezûr pastures.

VIII.—GENERAL CONDITION AND ADMINISTRATION OF THE CAUCASUS.

The Russians are not recent arrivals in Caucasia. A portion of the Kuban basin was peopled by them since the close of the tenth century, and in 914 others reached Berda, at the foot of the Karabagh Mountains. Over two hundred years ago Stephen Razin sacked Baku, and in 1723 Peter the Great pushed his conquests to the Persian frontier. For over a century the Muscovite power has secured a

Fig. 75.—Progress of Russian Conquest.
Scale 1 : 10,500,000.



footing in Transcaucasia, which has been gradually annexed to the empire either by conquest, purchase, or voluntary cession.

In spite of wars, migrations, wholesale exiles, and the insalubrity of certain districts, the population of Caucasia has rapidly increased since the conquest, although still relatively inferior to that of European Russia. The losses have been repaired by the immigration of the Cossacks, Russian peasantry, and Armenian fugitives, while the population of all the provinces has been increased by the normal excess of births over deaths. At the beginning of the military occupation Caucasia was a Russian tomb, fevers more than decimating those attacked during

the course of the year. But experience, quinine, a better hygienic system, and here and there the draining of the marshy lands, have brought about wonderful improvements, and at present the mortality of the Russians is less than in Russia proper.* A similar phenomenon has been observed in Algeria, where the French and Spanish immigrants have gradually become acclimatized. The actual rate of mortality is less in Caucasia than in any other part of the empire, and in this respect the country takes a foremost position in the world. The number of suicides is, on the other hand, rather high, and it is remarkable that they are here about equal in both sexes, whereas in Europe those of men are generally three or four

Fig. 76.—Fever Districts in Caucasia.

times greater than those of women. Amongst the Armenians and Osses the cases of female suicides are even more frequent than those of males. This is, perhaps, due partly to the enforced silence and monotonous lives of the Armenian women, and partly to the brutal treatment to which the Oss women are subjected.

A large portion of Caucasia rising above the zone of cereals can scarcely be inhabited except by a pastoral population. But there are also extensive tracts, formerly under cultivation, which have been rendered unproductive by desolating

* Mortality of the army of the Caucasus:—1837, 1 in 9 of those attacked; 1846, 1 in 17 of those attacked; 1862, 1 in 41 of those attacked. Total mortality:—1864, 25 in the 1,000; 1872, 19·86 in the 1,000. Total mortality in the Moscow district, 41·11 in the 1,000.

wars and the abandonment of the irrigation works. The vast plains of Echmiadzin, the Lower Kura, and Araxis have thus been partly changed to deserts, and even the region confined by the Alazan, Yora, and Kura is now a barren steppe, notwithstanding the copious streams surrounding it on all sides. The neglect of the irrigating canals has caused the disappearance of millions, but the population everywhere reappears with the gradual revival of these works and with the progress of the drainage system. Cultivated fields thus succeed to the swamps, and the land becomes at once more healthy and more populous.

Land Tenure—Agriculture.

In taking possession of Caucasia the Russian Government introduced great changes, often of a contradictory character, in the laws affecting landed property. These were further complicated by all the vicissitudes of conquest, the wasting of cultivated districts, destruction of nomad encampments, depopulation and wholesale shifting of the people, military and agricultural colonisation. During the first period of Russian rule all the colonies were of a military character. Composed of Cossacks, at once peasantry and soldiers, they had to build villages and forts, to till the land, dig canals, open up highways, and keep constant watch against the enemy. One feels amazed at the vast amount of work performed by these men, thanks to whom all the western division of Ciscaucasia has been finally settled. Its settlement would have been even still more thorough, had not the Government long prevented its peaceful colonisation by the Russian peasantry. Millions of serfs might have migrated to this region had they been free to do so.

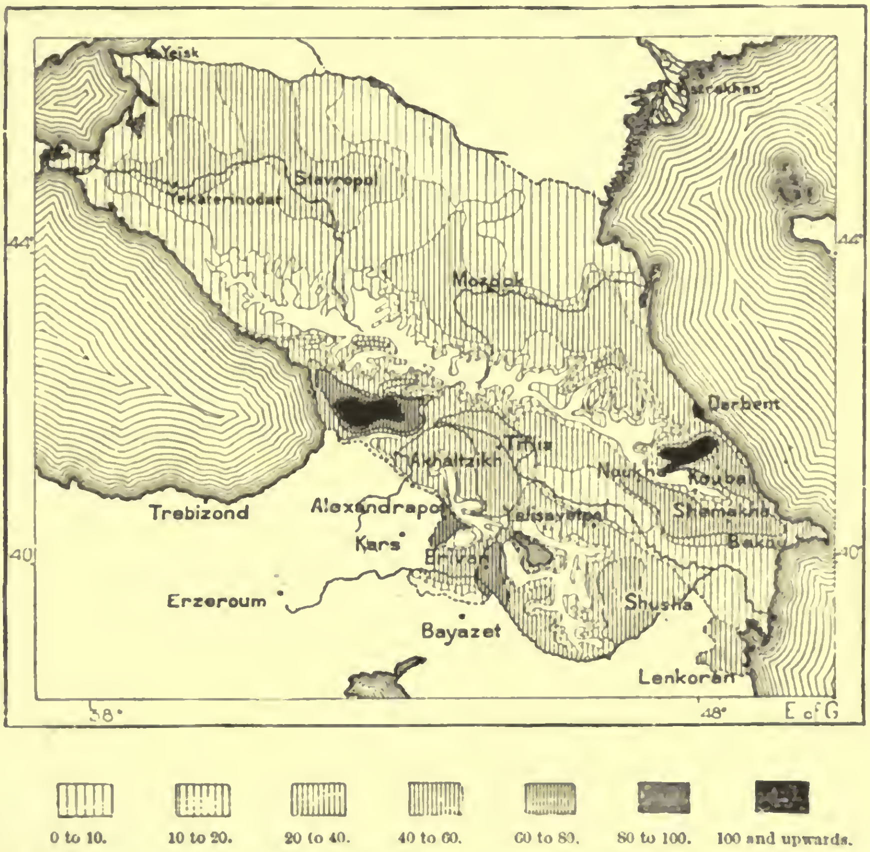
In all the already peopled districts of Caucasia the Government at first pursued the simple policy of securing the loyalty of the native princes by guaranteeing to them the property of the land, though occasionally compelled, as in Kabardia and Daghestan, to favour the people against their chiefs. But this system was soon abandoned, and towards the end of the reign of Nicholas every effort was made to gain over the local aristocracy. In many places serfdom was introduced, and large fiefs granted to the nobles. Some of the Kabard princes thus received domains of 30,000, 100,000, and even 250,000 acres, so that the State was afterwards obliged to repurchase many of these lands either for the Cossack settlers, or for the communes after the abolition of serfdom. The principle was even laid down in 1863 that the whole of the lands should belong to the communes; but in practice the large properties were maintained, and in Kabardia alone 140 lots, each of about 1,400 acres, were reserved for influential persons likely to be useful to the Government. All the officers of the army also received freehold allotments independently of the lands assigned to the communes, while all the forests and pastures remained undivided. Thus was brought about a state of things analogous to that of Russia. Below the large proprietary class came that of the peasantry, sharing the land according to the communal system of rotation, and paying an average tax to the State of about 3 roubles per family.

The serfdom, which under divers forms prevailed throughout most of Caucasia,

was at first aggravated under Russian rule, and even when abolished in 1866 very harsh conditions were imposed on the emancipated. In virtue of "free contracts" they were bound to pay the landlords either 200 roubles or six years' manual labour, children under fifteen years being charged 150 roubles, or ten years of forced labour. When the serf was at the same time owner of cattle or movable property this was divided into three parts, of which one part only was assigned to the freedman. Hence much misery, especially in the lowland districts.

The agricultural produce of Caucasia already suffices for a considerable export trade. Land was formerly valued in Imeria at from 22 to 28 roubles the hectare (2½

Fig. 77.—Density of the Population of the Caucasus in 1873 per Square Mile.



acres), whereas now it fetches ten times that amount; but the eastern districts of the Kura and Araxis, exposed to storms and locusts, have increased less rapidly in value. The superabundant cereals are largely used in the distillation of alcohols. Far more than Bessarabia, the Crimea, or the Lower Don valley, Caucasia is the "vineyard of the empire." In 1875 the land under vines still scarcely exceeded 212,000 acres, but the districts where wine might be grown certainly exceed those of France, and they have hitherto escaped the ravages of the phylloxera, though not those of the oïdium. Caucasia supplies most of the wines consumed in the empire, the rich vintages of Kakhetia being used chiefly for the table, those of Kislar and the Lower Terek for

mixing with other vintages. In the Akhaltzik district the vine is cultivated to a height of 4,800 feet above the sea. Tobacco is also becoming an important crop, 9,840 acres having yielded 1,700,000 kilogrammes of leaf in 1876, and supplying the chief article of export from the Black Sea ports. The Transcaucasian plains produce some cotton, which during the American war increased rapidly, and even found its way for a time to the markets of the West. At present the mean annual yield scarcely exceeds 480 tons. The raw silks of Nukha and Shemakha are highly appreciated, especially by the French weavers. Since the spread of the silk disease in the south of France Eastern Caucasia has become one of the most important fields for the production of the finer qualities. In 1848 a number of French female

Fig. 78.—Highways in Caucasia.
According to N. de Seidlitz. Scale 1 : 7,680,000.

Railways.
Railways in progress.
Carriage Roads.
120 Miles.

spinners settled in Zugdidi, Nukha, Shemakha, and other towns to teach the native women the art of winding the thread. For many other products, especially fruits and spring vegetables, Caucasia is destined to take the same position as regards Russia as Algeria has taken towards France. Tropical heats prevail in the Araxis valley, and wherever sufficiently watered the soil produces excellent crops. There is also a succession of climates on the mountain slopes, suitable for raising produce of the most varied character.

Population—Industries—Trade—Education.

The population of Caucasia, nowhere as dense as in Western Europe, is concentrated especially on the Mingrelian plains, where the climate and vegetation

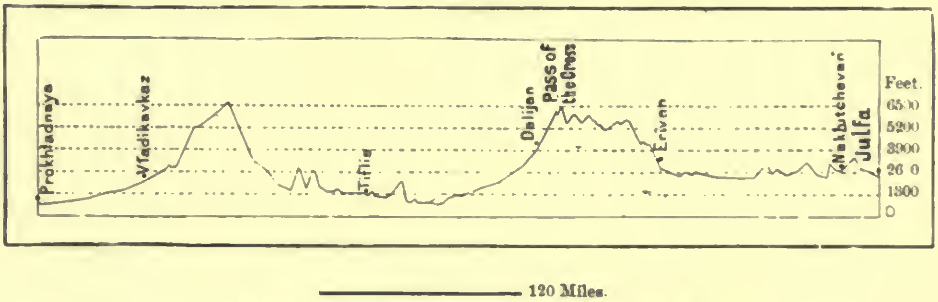
most resemble those of the west of France. In the districts of this region it amounts to about 80 per square mile, and these more densely peopled tracts are at the same time the most flourishing, and have most to spare for export.

The chase and forest produce have ceased to be of any economical importance, since most of the plains have been peopled and the mountain slopes largely cleared. But the fisheries are very productive in the Sea of Azov, the Euxine, and especially the Caspian. The Akhtari and Yeïsk limans, the river Kuban, the coasts of Poti and Batûm, the Lower Terek, and, above all, the Kura and Gulf of Kizil-Agach abound in animal life, and contribute largely to the support of the people and to the export trade to Russia and Persia.

Manufactures are still mostly confined to the old traditional industries, and to those connected with mining operations. But implements dating from the stone age are still found in use side by side with the powerful modern machinery now employed at the Baku naphtha wells, the Kedabek copper mines, the Saglik alum works, near Yelizavetpol, and the iron works of Chasash, in the Bolnis valley, 14 miles south-

Fig. 79.—Section of the Route from Vladikavkaz to Jufa.

Scale 1 : 8,000,000.



Scale of Altitudes fifty times larger than that of Distances.

west of Tiflis.* This state of things must necessarily continue until the Caucasian provinces are connected with the rest of the world by means of good roads. Each of the two great divisions has but one railway, one connecting Ciscaucasia with the Russian system by the Rostov-Vladikavkaz line, the other connecting Tiflis with the Euxine. But both slopes of the Caucasus are crossed only by the military routes passing beneath the Kazbek glaciers and over the Mamisson Pass. In the east the range is skirted by the road from Derbend to Baku, and in the west the Abkhasian coast route will soon be opened to traffic. The great lines of railway destined to connect Vladikavkaz with Tiflis, Yelizavetgrad with Petrovsk and Baku, Groznaya with Saratov *viâ* Astrakhan, Batûm with Rostov, have only just been begun. The line from Tiflis to Baku, which will complete the junction of the two seas, has also

* Steam-engines in the Caucasian mines (1876), 91 horse-power. Water engines in the Caucasian mines (1876), 174 horse-power.

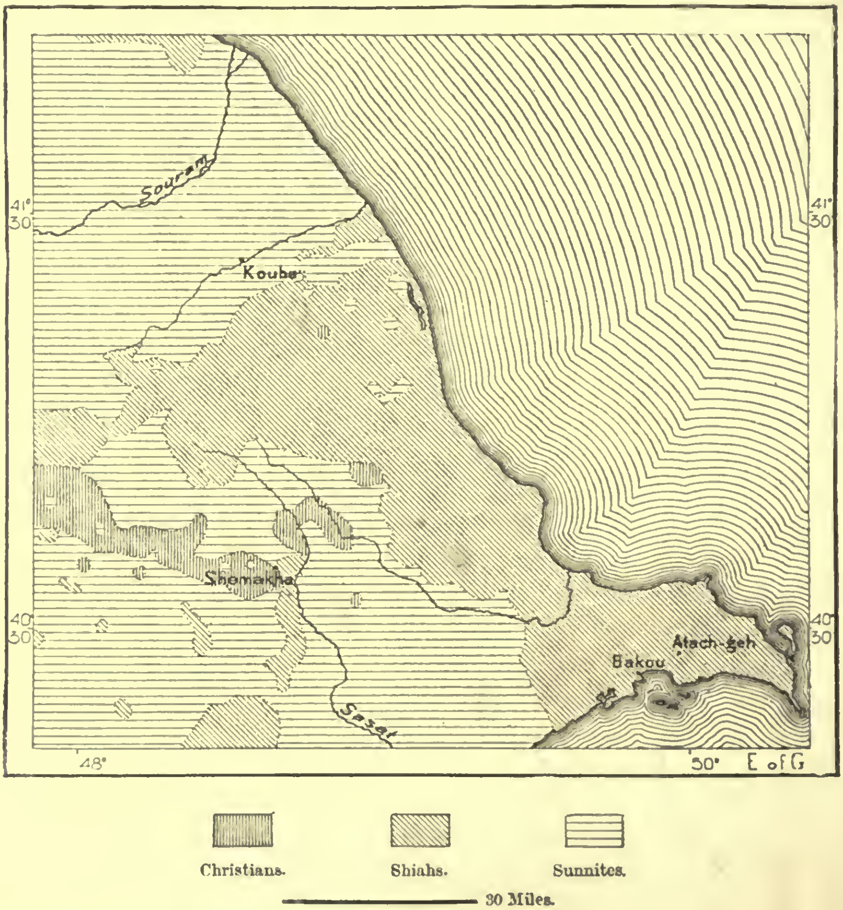
Mining returns (1876):—

Silver	810 lbs.	Alum	130 tons.
Lead	1,785 cwt.	Salt	24,530 ,,
Copper	2,550 ,,	Coal	5,218 ,,

been recently taken in hand. For the last twenty years the project has been entertained of a great international line between Europe and India, to follow the west coast of the Caspian *viâ* Baku and Lenkoran to Reshd, and so on across the Iranian plateau. Meantime the southern plateaux are approached by one good road only, the military route between Kars and Erzerum forming a continuation of that between Tiflis and Kars *viâ* Alexandrapol. One branch of this route descends southwards towards Erivan and the Persian frontier at Jufa.

The general trade of Caucasia must long remain inadequate to meet the expenses of the international highways to Asia Minor and Persia. In 1878 the imports and

Fig. 80.—Shiahs and Sunnites in Eastern Caucasia.
From Official Returns. Scale 1 : 2,000,000.



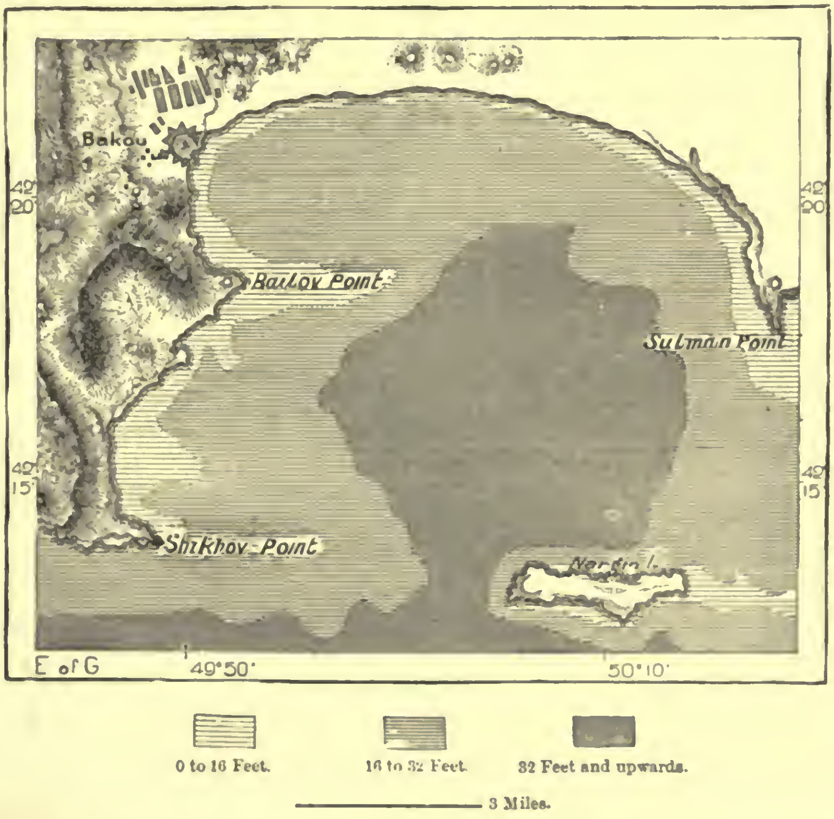
exports amounted altogether to about 12,000,000 roubles, or less than 4 roubles per head of the population. Although Persia communicates more easily with Europe by the north than by other routes, its exchanges with Transcaucasia and Astrakhan fall short of 5,000,000 roubles.

If Caucasia still lacks the material unity imparted by a well-developed railway

system and large commercial marts, it is still more deficient in that moral unity which flows from the sentiment of a common nationality or group of nationalities possessing the same interests and aspirations. Instruction also is in too backward a state to allow the youth of the various races to acquire that feeling of brotherhood derived from a community of ideas. Nevertheless great progress has been made in this respect, and in many schools the Armenian is now found associated with the Tatar, the Russian with the Georgian. Moreover, a large number of the middle and upper classes send their children abroad. In 1879 there were no less than twenty-eight Armenians in the various schools and colleges of Zurich. But a great

Fig. 81.—Baku Harbour.

Scale 1 : 250,000.



obstacle to instruction in common is caused not only by the variety of languages, but by the different alphabets in current use. The Abkhasians, Osses, and Daghestan highlanders were altogether unlettered until Lhuillier, Schiefner, Uslar, and others invented writing systems suitable to express the fifty distinct sounds of their languages. Caucasia, more perhaps than any other region, stands in need of some such common system as that proposed by Lepsius in 1852, and subsequently under other forms by Bell, Coudereau, and others.

Religions—Finance—Administration.

But Caucasia is noted for its diversity of creeds quite as much as for its great variety of speech. Paganism under many forms still survives amongst the hillmen. Here are found the two great Moslem sects, numerous especially in the government of Baku,* where they are distinguished from each other by the cut of the hair and by other practices. Here also dwell Jews, converted Israelites, and Judaizing Christians, besides Orthodox Greeks, Georgian and United Armenians, which are the prevailing forms of Christianity. But dissidents are also numerous, far more so even than might be supposed from the official returns. The Molokanes especially have important colonies in the government of Stavropol, near Tiflis, on the Akhalaki plateau, in the Mûgan steppe, and they are now spreading in the annexed territories.

All these national and religious differences have necessitated different theories and practices in the administration of justice. Hence, after many useless efforts, the Government has been compelled to abstain, at least for the present, from introducing a common system of jurisprudence. Amongst the Moslem highlanders two codes are still maintained—the *shariat*, or religious code based on the Koran, and the *adot*, or common law. The former is appealed to only in religious, family, and testamentary questions, while the latter regulates the ordinary affairs of property and communal interests. Its decisions are pronounced in public by elected judges, and certain villages noted for their scrupulous administration of justice have been chosen by usage as veritable courts of appeal in all doubtful cases.

Most of the hillmen still foster a feeling of animosity against their conquerors, and recall with pride the days of their ancient independence. Amongst the lowlanders, some, like the Nogai Tatars and the Tats, know that they have kinsmen and co-religionists elsewhere, and regard themselves as strangers in the land. Others, like the Kurd shepherds, are immigrant nomads, always ready to strike their tents. The Georgians feel that their destiny is rather to serve the Russians than become their equals, while the Armenians endeavour to make themselves masters of all by the power of money. The Slav invaders, although already the most numerous relatively, have not yet succeeded in giving political cohesion to the population. Their ascendancy is mainly of a military character, and Caucasus remains still for them campaigning ground quite as much as a field for colonisation.

From the strategic point of view Asia Minor and Persia are completely open to the armies of the Czar. The Euxine has become a Russian lake, while the Caspian belongs still more exclusively to the northern Power. Here the fleet at anchor in the commodious harbour of Baku may at the first signal ship an armed force for the coast of Mazanderan. Alexandrapol and Kars, strongholds and arsenals of the first importance, threaten the upper basin of the Euphrates, and all the passes are already in the hands of the Russians. In case of a struggle with England for supremacy in Western Asia, Russia occupies a masterly position. The Bosporus has already been three times threatened from the north; now it may also be attacked

* Mohammedans in the Baku government (1873):—Shiah sect, 270,787; Sunnites, 206,121.

from the east. If England reigns supreme in the Mediterranean, she would still look in vain for armies strong enough to oppose the Russians in Asiatic Turkey, of which she has, perhaps imprudently, guaranteed the present limits. Through the Euphrates valley Russia may also at her pleasure advance towards the "holy places" once conquered by the Crusaders, and over which Christians of all sects are endeavouring to acquire a religious preponderance. Is it not further evident that the influence of Russia must increase in that direction with the growth of population in Caucasia? At all times the peoples of the Ararat and Anti-Caucasus highlands took a large part in the political movements of Western Asia, and these peoples have now become the van of the immense Slavonic nation. Against this formidable power the only barrier would be an alliance of free peoples. But it can scarcely be hoped that the Armenians, Kurds, Turks, and Arabs of the Tigris and

Fig 82.—Stavropol.
Scale 1 : 800,000.

15 Miles.

Euphrates basins will soon become emancipated, and forget their religious hatreds and national rivalries sufficiently to unite against the common foe.

The Caucasian peoples possess no political privileges over the Slav inhabitants of the empire. All alike are subjected to the same autocratic will of the Czar, whom all are equally bound to obey "in spirit no less than in act." None of them enjoy constitutions guaranteeing their rights, though several are still more or less protected by written or unwritten codes. The Czar is represented in Caucasia by a lieutenant-general, or viceroy, with full administrative powers. The families of the former native rulers, while deprived of all political authority, are still in the enjoyment of pensions, privileges, and honours, thanks to the "eternal and faithful submission" sworn by them to the Czar.

The Caucasian budget, whose receipts amounted in 1878 to 6,750,000 roubles, is included in the general finances of the empire. Transcaucasia alone, including

Daghestan, has a general budget, which increased from 5,358,470 roubles in 1870 to 8,784,980 in 1880, and which would amply suffice for the local expenditure, were this not doubled and occasionally quadrupled by the maintenance of considerable forces in the frontier fortresses. The deficit thereby created varies in time of peace from 18,000,000 to 40,000,000 roubles, rising in time of war to 55,000,000 and upwards, and amounting in the ten years between 1869 and 1878 altogether to no less than 343,131,000. The receipts in the whole of Caucasia amounted in 1878 to 16,339,703 roubles, and the expenditure to 71,660,325, leaving a deficit of 55,320,622. The chief receipts are derived from the excise on alcohol, which averages about one-third of the whole income.

Caucasia is administratively divided into provinces of very unequal extent, all of military origin, and officially designated either as governments, provinces, circles, or divisions. Tiflis, capital of all Caucasia, is at the same time the chief town of Transcaucasia, while Stavropol, advantageously situated on the line of approach to the centre of the main range, is the chief administrative capital of Ciscaucasia. Daghestan, which would seem to belong properly to the northern, has been included in the southern division. So also the district of Kuba is comprised in the Transcaucasian government of Baku, doubtless owing to the ethnical and religious unity of the populations dwelling on both slopes in the eastern division of the range. Derbend, or "The Gate," thus remains the political limit of the two regions north and south of the Caucasus.

The Appendix contains a table of all the provinces, with their districts, areas, and populations according to the official returns for 1873—7. Here Daghestan has been separated from Transcaucasia proper. The Trans-Caspian district, depending administratively on the military government of Caucasia, and comprising a portion of the still unsettled Turkoman country, belongs geographically to the Aralo-Caspian region, from which it cannot properly be separated.

CHAPTER III.

THE ARALO-CASPIAN BASIN.

RUSSIAN TURKESTAN, THE TURKOMAN COUNTRY, KHIVA, BOKHARA, REGION OF THE UPPER OXUS.

I.—GENERAL SURVEY.

WEST of the Caspian the limits of Europe are clearly defined by the ancient Ponto-Caspian Strait, which runs as a natural dividing line along the foot of the Caucasus. But north and east of the Caspian Europe and Asia are merged together in a vast plain, where dreary wastes of sand, clay, or rock, saline steppes and muddy swamps, stretch from horizon to horizon. Here the only natural limit of the two continents is the lowest part of the elevated tract between the Aral basin and the Ob valley. Both sides of this ridge are studded with countless ill-defined lakelets, the remains of dried-up seas. But beyond it the lowlands stretch away to the foot of the plateaux and highlands forming part of the main continental mountain system.

Thus the Aralo-Caspian slope of the Central Asiatic tablelands blends north-westwards with the Russian steppes between Ural and Caspian, while scarcely separated northwards from the Ob valley. But everywhere else it is sharply defined westwards by the Caspian, southwards by the highlands separating it from Persia and Afghanistan, and stretching in an elongated curve from the south-east corner of the Caspian to the Hindu-Kush. Eastwards and north-eastwards rise the upland pastures and snowy peaks of the Pamir, the Tian-shan, and Tarbagatai ranges. The whole region, including the Russian protected states, Wakhan, Badakshan, Balkh, and the Turkoman country, has an estimated area of over 1,200,000 square miles, and to this has now been added a tract of over 400,000 square miles in the Ob basin, henceforth administratively included in the general government of Russian Turkestan.*

* Area and population of the Aralo-Caspian lands :—

	Area in Square Miles.	Probable Population in 1880.
Russian possessions from the Atrek to the Irtish	1,520,000	4,500,000
Khiva	23,000	300,000
Bokhara	95,500	2,150,000
Turkoman country	60,000	200,000
Afghan Turkestan	54,000	950,000
Total	1,752,500	8,100,000

This region, which slopes westwards and northwards to the Caspian, Aral, and Balkhash, is about equally divided into a lowland and highland district. Climate, flora, and fauna vary as much as the geological formations in a land rising in some places to elevations of 20,000 and 22,000 feet; in others, as along the Caspian shores, sinking below sea-level. Nevertheless a certain analogy is maintained between the eastern highlands and the western lowlands. In both cases the annual variation of temperature is greater than in Europe or any other sea-girt land. In autumn and winter the north-east polar blasts prevail on the plains and uplands, giving place in spring and summer to the hot equatorial winds from the south-west. Thus the normal climate of each season becomes intensified here as elsewhere in the interior of the continent, so that in July this region is included in the isothermals of 20° to 25° Centigrade, a temperature answering to that of the Cape Verd Islands, 1,650 miles nearer to the equator, while in January the isothermals are those of Canada, South Greenland, and Spitzbergen, some 1,800 miles nearer to the North Pole. But the variation between the hottest and coldest days is even still greater, averaging no less than 130°, or from about 111° to —12° and even —20° Fahr. On the plains the dryness of the atmosphere and absence of dew add to the rigours of the climate. Whole years have passed without any rainfall, and in 1858 the rains lasted only four hours altogether in the Kara-kum Desert. The moisture borne by the south-west breezes is precipitated on the slopes of the Pamir and in the Tian-shan valleys; but even here the discharge is relatively far less than on the European and Indian highlands.

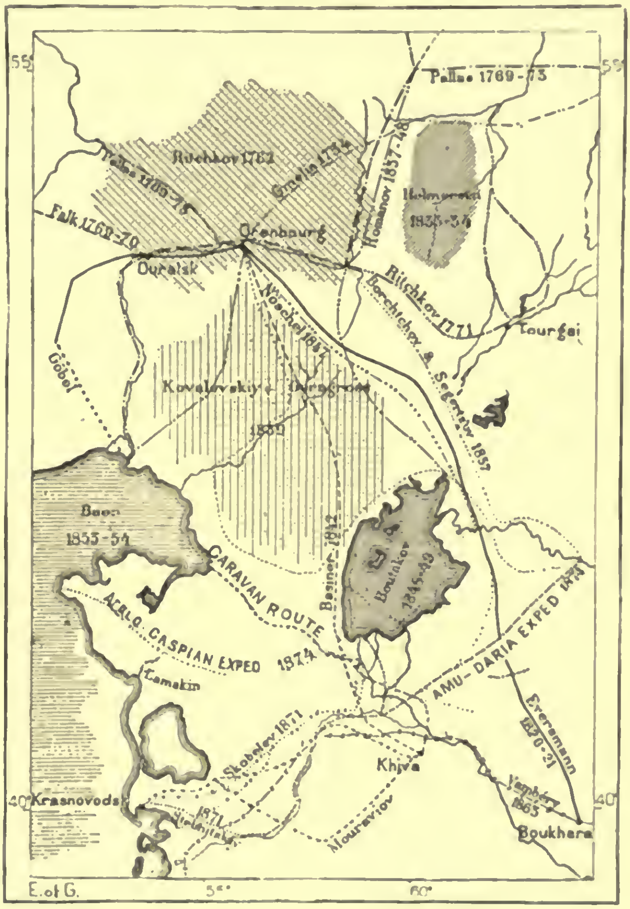
Another characteristic of Russian Turkestan is the continuous drying up of the soil going on throughout the whole of the present geological epoch. The twin rivers, Oxus and Sir-daria, flowing from the Pamir and Tian-shan nearly parallel to each other, at present discharge their waters into the Aral Sea; but these formerly far more copious streams united in a common channel, disemboguing in the Caspian. Though still ranking in length amongst the great Asiatic rivers—over 1,200 miles each—they are far inferior in volume to the Siberian, Chinese, and Indian streams flowing seawards. Their basins show evident signs of gradual absorption—old channels now partially filled up, numerous rivers formerly reaching the main streams, but now lost in the sands, or expanding into brackish morasses, thousands of lakelets now indicated only by saline incrustations. Even the large inland seas, such as Aral and Balkhash, have diminished in size, while others have been replaced by the Kulja and Ferghana plains. Owing to this continually increasing dryness a large portion of the country has been transformed to steppe lands even on the higher grounds, as on the Pamir, Tian-shan, and Tarbagatai, where the growth of vegetation is limited to three months, partly by the winter snows, partly by the summer droughts.

Such a region is necessarily but thinly inhabited, the average being rather less than four persons to the square mile, or six or seven times less than in Caucasia, notwithstanding its vast extent of waste lands. But the local traditions, historical records, and the ruins of numerous cities leave no doubt that the country was formerly far more densely peopled. The inhabitants have disappeared with the running waters. The powerful empires of the Oxus and Sogdiana basins have

vanished; the great centres of Eastern civilisation have become eclipsed; many cultured peoples have reverted to barbarism; and the nomad has triumphed over the agricultural state. Even the ruling race has changed, the original Aryan element having been largely replaced by Turkomans, Kirghiz, and other Tûrki peoples.* The upland Pamir valleys from Karateghin to Wakhan are still occupied by Aryan agricultural tribes, some probably autochthonous, others driven to the highlands when the plains were overrun by the nomads from the north-east. The ethnical evolution begun by climatic changes was hastened by wars and massacres. But the urban populations were rendered partly independent of the changed outward conditions by trade and industry, so that the original stock, diversely intermingled with the intruders, has here held its ground to the present time. Aryan and Tûrki peoples thus continue to dwell in the same towns, forming distinct communities, which adapt themselves to the surroundings according to their respective temperaments and hereditary habits. Hence, in a political sense alone, the Oxus has for ages served as the limit between Iran and Turan. North of this river Iran has at all times maintained a footing in the midst of the Turanian peoples.

Fig. 83.—Routes of Explorers in the Aralo-Caspian Basin.

Scale 17 : 400,000



300 Miles.

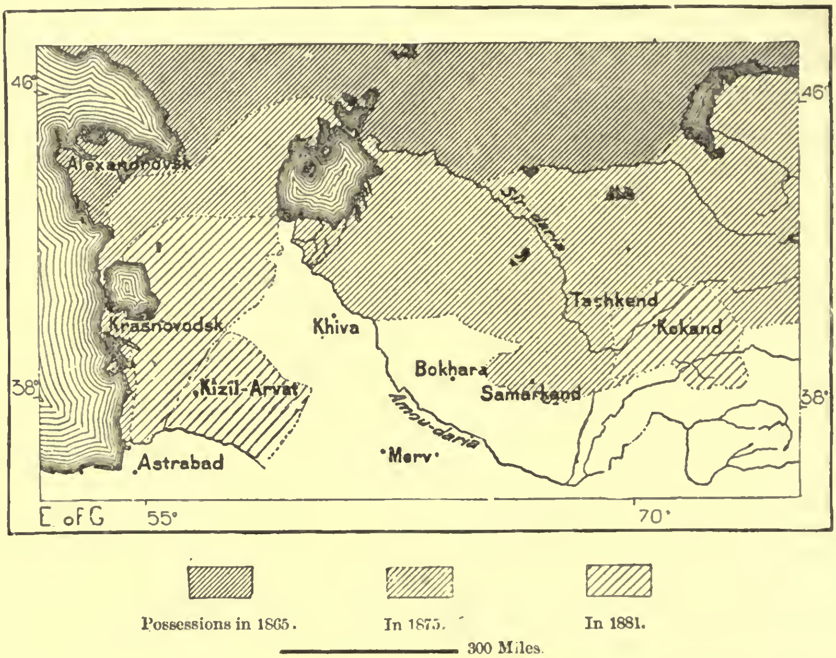
And now the incentive to a higher development flows once more from a race of Aryan stock. The Russians, strong in the power imparted by a superior culture, are enabled to grapple with the difficulties of climate and vast distances in consolidating their new Aralo-Caspian conquests. After having surveyed the land as

* Throughout this work the term *Tûrki* is to be taken as practically synonymous with the popular but less accurate *Tatar*, or "Tartar." Farther on occurs the expression "Turanian," used in a very vague way by most ethnologists. Here it will be strictly limited to the Tûrki nomad as opposed to the Iranian settled populations.—Ed.

naturalists, traders, or envoys, they have settled down as its political masters. They establish themselves in the already existing towns, found others on more favourable commercial and strategical sites, and have even begun a more systematic colonisation in the upland valleys east of the Tatar plains, thus assigning definite limits to the nomad regions. Lines of steamers on the two main streams, roads, and, later on, railways, will cause the hitherto insurmountable distances to vanish, thus enabling the Slav element all the more easily to establish its political and social predominance. In the midst of Tajiks, Sartes, and Uzbegs, Tashkend and Samar-

Fig. 84.—Russian Encroachments in Turkestan.

Scale 1 : 22,000,000.



kand are becoming Russian cities, just as Kazan has been Russified in the midst of the Tatars, Chuvashes, and Cheremissians of the Volga basin.

Since the middle of the present century the Russian power has rapidly advanced in this region, notwithstanding the final limits from time to time laid down by the St. Petersburg authorities. Since the capture of Ak-Mejid, on the Sir, in 1853, a territory of about 460,000 square miles has been acquired, partly through the caprice of some ambitious captain, partly under pretext of chastising some unruly tribe. Gorchakov's circular of 1864 limited the farther advance of the imperial arms to a few settled tracts beyond the nomad districts, "where both interest and reason required them to stop." But since then vast strides have been made towards the subjection of the whole Aralo-Caspian basin, and by the fall of Geok-tepe in January, 1881, the independence of Merv and of the few remaining Turkoman tribes is directly menaced. An official treaty concluded in 1873 between Russia and England includes a large portion of their territory in the Afghan states. But such

diplomatic triflings cannot prevent Russian influence from making itself more and more felt in these regions, which are cut off from Afghanistan proper by the Hindu-Kush, and which belong physically and ethnically to the Aralo-Caspian basin. All the lowlands stretching from the Caspian to the foot of the Pamir, and from the Iranian tableland to the sources of the Ob and Irtish, may already be considered as practically Russian territory, separated by a single range from British India or its immediate dependencies.

East of Turkestan the Russians have for neighbours the Chinese, whose empire is separated from them by the Pamir, the Tian-shan, and farther east by a conventional line running through the gates of Zungaria, and at many points offering no obstacle to invasion. But so far from having anything to fear from the possible irruption of some modern Jenghis Khan, here the advantage is entirely on the side of the Russians, both in arms, resources, strategical positions, and military science.

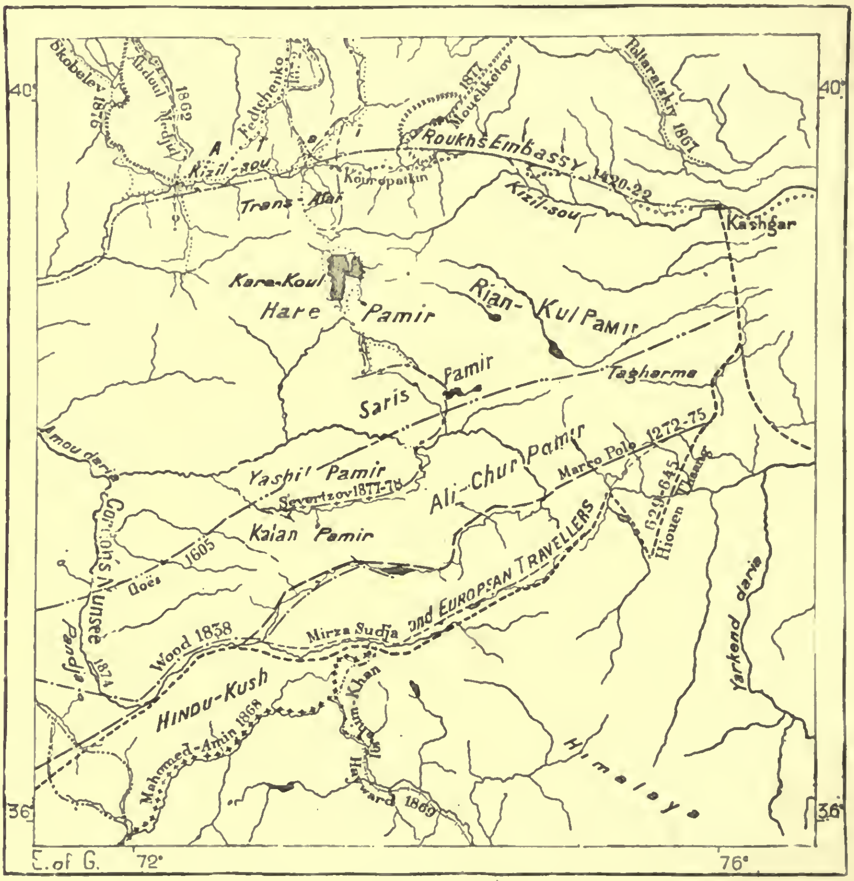
II.—THE PAMIR AND ALAÏ.

The Pamir and Tibet, which converge north of India and east of the Oxus, form jointly the culminating land of the continent. Disposed at right angles, and parallel, the one to the equator, the other to the meridian, they constitute the so-called "Roof," or "Crown of the World," though this expression is more usually restricted to the Pamir alone.

With its escarpments, rising above the Oxus and Tarim plains west and east, the Pamir occupies, in the heart of the continent, an estimated area of 30,000 square miles. With its counterforts projecting some 300 miles, it forms the western headland of all the plateaux and mountain systems skirting the Chinese Empire; it completely separates the two halves of Asia, and forms an almost impassable barrier to migration and warlike incursions. Yet notwithstanding its mean elevation of 13,000 feet above arable land, it has been frequently crossed by small caravans of traders or travellers, and by light columns of troops. The attempt could not fail to be frequently made to take the shortest route across the region separating the Oxus from Kashgaria, and Europe from China. Hence the Pamir has often been traversed by Greeks, Romans, Arabs, Italians, Chinese, some as traders, some as explorers, some inspired by religious zeal. But of these travellers very few have left any record of their journey, and all took the lowest routes across the plateau. Here are neither towns nor cultivated land, so that it becomes difficult to identify any of the former routes. It was reserved for modern explorers to convey a general idea of the plateau, by their methodic surveys introducing order into the confused nomenclature of the ancients, reconstructing the geography of Central Asia, and getting rid of the fanciful mountain ranges traced at haphazard on the maps. The imaginary "Bolor," which, according to Humboldt, formed the axis of the continent, has already vanished, at least as a line of crested heights, and, like the Imaus of the ancients, it is now merged in the broad tableland of the Pamir. The name itself would seem to have been restricted to a district near the Hindu-Kush, probably identical with the present Dardistan.

Traders from Greece began, about the twelfth century of the new era, if not earlier, to become acquainted with the routes over the Pamir to Serica, or "the Land of Silk." Being already established in Baktriana, on the valley of the Middle Oxus, the Greeks naturally sought to cross the plateau by ascending the Oxus until stopped by some impassable gorge. Ptolemy, relying on older documents, tells us, in fact, that they proceeded northwards to the country of the Comedes, whose name possibly survives in that of the town of Kabadian. Farther on the

Fig. 85.—Routes of Explorers in the Eastern Pamir.
Scale 1 : 4,500,000.



90 Miles.

road followed the foot of the plateau by the valley of the Oxus, and probably of its tributary the Surgh-ab, running thence towards the "Stone Tower," the chief station and resting-place on this dreary journey. This tower Rawlinson seems inclined to identify with one of the numerous *tash-kurgan*, or cairns, scattered over this region. It stands 11,000 feet above the sea, on a head-stream of the Yarkand, at the eastern base of the Pamir in Sirikol. But it does not seem probable that, in order to pass from the Surgh-ab to the Tarim (Oechardes) valley,

the caravans would have turned so far to the south-east, besides which Gordon regards this cairn as in any case of recent origin.

Two hundred years before the Greeks had crossed the Pamir the Chinese had made the acquaintance of the peoples dwelling on the Sir and Oxus, with whom they had established relations through the passes of the Tsung-ling, or Pamir of the Russian geographers. After Chang-Kien's expedition (probably about 128 A.D.) trade was rapidly developed, and large Chinese caravans soon found their way directly from the Tarim to the Sir basin in the "Tavan" country. To these caravans has been attributed the introduction into China of the vine, walnut, pomegranate, bean, cucumber, parsley, lucern, saffron, and sesame. Coming from the Tarim valley, the Chinese traders naturally sought to cross the heights at their narrowest point. They skirted on the north-east the Pamir and Alaï by the Terek-davan, but we also know from contemporary records that they crossed the Pamir directly by the southern passes in order to reach the Oxus and Ki-pin, or Kabulistan.

This direct commercial movement between east and west was interrupted by civil wars and migrations. But the routes over the Pamir were reopened by the Buddhist missionaries and pilgrims. Hwen-T'sang, the most famous of these pilgrims, describes the journey of sixteen years' duration which he made across Central Asia in the first half of the seventh century, and a sufficient number of names in his itinerary have been identified to enable us to follow him over the Southern Pamir through Sirikol, Wakhan, and Badakshan. This is nearly the same route as that taken by Marco Polo in company with his father and uncle in 1272—5. But this traveller seems to have passed more to the north, instead of ascending the Upper Oxus crossing the Pamir in a north-easterly direction, travelling "twelve days on horseback" in a region "without dwellings or pasture." In 1603 the Catholic missionary, Benedict Goës, also crossed the Southern Pamir, probably by the same route as Hwen-T'sang. But two hundred years elapsed before it was again approached by a European traveller. In 1838 Wood ascended a head-stream of the Oxus to the Sari-kul, or Kul-kalian, and with this journey begins the era of modern scientific exploration. In 1868 Hayward visited the south-east corner of the plateau; the Hindu emissaries of the Indian Topographic Bureau also traversed the "Great" and "Little" Pamir; the Greek Potagos penetrated, in 1871, from Badakshan to Kashgar; and in 1873 Forsyth, Gordon, and Trotter crossed the plateau to Badakshan, and sent a Hindu geometrician to visit Shignan and Roshan.

But the Northern Pamir has ceased to be visited ever since the epoch of Chinese supremacy. The Arabs, masters of the Sir valley, sent their trading expeditions by relatively easier routes round the northern base of the Tian-shan, and the same route was followed by the European envoys to the Mongol court. The rediscovery of the Northern Pamir is due to the Hindu Abdul Mejid, who was the first to cross the Pamir from south to north in 1861, and to the Russian explorers, Fedchenko, Kostenko, Mushketov, Sieverzov, Oshanin, and others. Over four-fifths of the whole area have already been surveyed, and Sieverzov's expedition of 1878 came within some 30 miles of the English exploration of 1873. About

Fig. 86.—The Alaï and Trans-Alaï Range.

twenty important points have been determined astronomically; the elevations of two thousand places have been accurately taken; and it is now certain that no heights of any consequence have escaped observation.

Although rising 13,000 feet above the Turkestan plains, the Pamir is limited north and south by ranges towering 7,000 and even 10,000 feet higher. On the south the Hindu-Kush, continued by the mountains connecting it with the Kuen-lun, forms the great parting-line of the Indus basin. On the north the Trans-Alaï and the Alaï, forming geographically a section of the Tian-shan, separate the Pamir from the slopes draining to the Sir-daria. But the region thus comprised between two escarpments running west-south-west and east-north-east is far from presenting a uniform surface, for it is divided into a number of smaller Pamirs by ridges and deep ravines, through which the streams drain, west to the Oxus, east to the Tarim, without any well-defined water-parting. The relief of the uplands, even excluding the distinct ridges, presents deviations of over 3,000 feet, which suffice to produce a certain variety in the climate and scanty flora of the plateau. Still the ridges offer no effectual barrier to the nomad Kirghiz pastors or travellers, and the Pamir is crossed in every direction by a thousand tracks. In the north the eminences attain a relative height of no more than 1,000 to 1,500 feet, while in the centre and between the Rang-kul and Yashil-kul the routes may be compared to artificial highways. In the west General Abramov was able to transport a battery over the Alaï, so that with modern appliances the Pamir presents no insurmountable obstacles even to well-appointed military expeditions, at least during the four months from June to September. At other times the surface is covered with snow and exposed to fierce gales, rendering the Pamir uninhabitable.

Below the upper clays and sands the Alaï rocks consist of granites and crystalline schists. The granites run precisely in the same direction as the Tian-shan and the spurs projecting westwards into the Turkestan lowlands. But the intervening spaces are occupied by triassic and other more recent formations. The general tilt of the land is towards the west and south-west, and the somewhat ill-defined water-parting lies much nearer to the Eastern Tarim than to the Western Aralo-Caspian basin. On its eastern verge also rises Mount Tagharma, or Taghalma, culminating point of the land. This mountain, known also as the Wi-tagh ("House Mount") and Muz-tagh-ata ("Father of the Ice Mounts"), rises, according to Trotter and Kostenko, to a height of 25,500 feet, and is continued south-eastwards by the Chichiklik, which is itself about 20,000 feet high. These highlands, which run transversely with the Tian-shan, are the Tsung-ling, or "Onion Mountains," of the Chinese, and the Kizil-art of the Kashgarians.

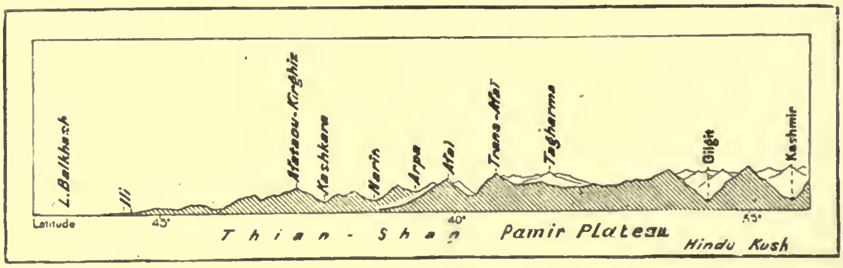
The Pamir is often swept by terrific gales from the north-east, where its sheltering mountain barrier is broken at several points. On the shores of the Kara-kul and in the sandy gorge of the Kizil-art the very rocks are worn by the sands incessantly playing on them from the north. In these lofty regions the air is generally very dry and clear, except when clouded by the powdered mists of the desert winds. The extremes of temperature occasioned by this transparent atmosphere, combined with the snow-storms, which prevail chiefly in February and March, are amongst the principal dangers to which travellers are exposed. They also suffer much from "mountain sickness" and distressing headaches.

Flora, Fauna, Lakes of the Pamir.

The Pamir is frequented in summer by Kirghiz nomads, with their flocks rrom Khokand and Karateghin in the north, and from Shignan in the west. Cairns are scattered here and there, marking old camping grounds, or the graves of Kirghiz "saints," decked with sheep's horns and fluttering rags. Above the line of arborescent vegetation, indicated by the willow, dwarf birch, juniper, and thorny shrubs, the only available fuel is that afforded by the wood of roots of a species of lavender, while still higher up even this resource fails. Yet in many places, even at altitudes of 13,000 feet, the grass is as thick as on the grazing grounds of West Europe, and perhaps richer. Marco Polo's statement that the Pamir affords the best pasture in the world, fattening a lean hack in ten days, is confirmed by recent explorers and their Wakhi guides. In the upland Sirikol valley sloping towards Kashgaria barley, haricots, and other plants are cultivated as high as 10,300 feet. Yet the parallel ridges, especially in the north, are almost destitute of vegetation, and here nothing grows except in the moist hollows on the banks of the lakes and rivulets.

The fauna is much richer than was formerly supposed. Sieverzov found in 1878 no less than 112 species of birds at an elevation at which on the Alps there

Fig. 87.—Relief of the Highlands and Plateaux between the Hindu-Kush and Tian-shan.
Scale 1 : 13,900,000.



300 Miles.

are no more than a dozen. The muddy shores of the lakes show traces of the chamois, hare, deer, fox, bear, wolf, lynx, leopard, and on the Great Pamir are wild goats like those of the Himalayas. But the typical animal of the plateau is the so-called *kachkar*, or *arkhar* (*Ovis poli*), a species of sheep over 3 feet high, weighing from 400 to 430 lbs., and distinguished by enormous horns inclined backwards in a double spiral. Formerly very numerous, the kachkar seems to be disappearing from the Pamir, and in the north it was nearly swept away by the epidemic of 1869. Potagos appears to have met a small species of monkey in the upland valleys of the south; but the bear has vanished from the north, and the tiger spoken of by some travellers was more probably a leopard.

Traces of increasing aridity are no less evident on the Pamir than elsewhere in the Aralo-Caspian basin. A great many lakes have already ceased to overflow, and have been gradually changed to isolated saline or brackish tarns. Such is the

Sussik-kul in the south, though the Rang-kul still retains its sweetness, thanks to the stream through which it drains to a tributary of the Oxus. In many places the old lakes are now indicated by incrustations of salt and magnesia.

The Kara-kul, or "Black Lake," so called from its deep blue colour, is the largest on the Pamir, but seems at present to be passing through a transition period. Situated immediately south of the Kizil-art, it is everywhere enclosed by snowy mountains, but its vast basin is no longer entirely flooded. Its present area is about 120 square miles, but its former extent is clearly marked by numerous islands, peninsulas, swampy flats, and the dazzling white incrustations of magnesia met with along its shores. It is divided into two halves by a ridge running north and south, and connected with the mainland by a strip of sand. Its feeders no longer compensate for the loss by evaporation, the rainfall is very slight, and nearly all the moisture is discharged either as hail in summer or snow in winter. Before Kostenko's visit the lake was represented as draining either to the Kashgar or to the Oxus, or even to both basins. But if it ever existed the outlet through the Markan-su north-east to the Kashgar has long been dried up, while that flowing south to the Oxus seems to be intermittent, during high floods still sending a little water through the Chon-su or Ak-baïtal to that river. Being thus without a regular outflow, its waters have become so bitter that animals will only drink them when suffering from extreme thirst. But they are always clear, and apparently stocked with fish. According to the nomads the level of the lake rises regularly every Friday, a belief Kostenko seems half inclined to credit. Korostovzev also speaks of regular risings, without, however, indicating their duration.

The Alaï Highland.

North of the Pamir the two parallel ramparts of the Trans-Alaï and Alaï belong to the Tian-shan system, and their geological structure, according to Mushketov, is the same. But these diorite and granite masses being separated by the Kog-art and Terek-davan * Passes from that range, they may be regarded as forming an independent system. This western section of the Tian-shan, merging in the Turkestan plains between the Sir and Oxus basins, has a length of 420 miles, and, like the Tian-shan proper, consists of various ridges running either east-north-east or north-west, and crossing each other at intervals.

At the north-east corner of the Pamir the two ranges present a remarkably regular appearance. The Alaï, or Kichi-Alaï, forming the water-parting between the Sir, Oxus, and Tarim basins, sharply limits the Ferghana depression by a barrier of crests with a mean elevation of from 13,000 to 18,000 feet, which are separated from each other by elevated passes. Of these one of the lowest is the Isfaïram Pass, 12,000 feet high, at one of the "breaks" in the Alaï, where the chain suddenly takes a westerly direction. From a neighbouring bluff a view is afforded of the snowy monarch of the Trans-Alaï, which Fedchenko has named

* The Tian-shan passes bear the Tatar names of *davan* or *daban*, *art* or *yart*, *bel* and *kutal*. The *davan* is a difficult rocky defile, the *art* a dangerous gap at a high elevation, the *bel* a low and easy pass, the *kutal* a broad opening between low hills (Fedchenko).

the Kaufmann Peak, and which is probably the culminating point of the whole Tian-shan system. A little farther east rises a group of three other crests, of nearly equal elevation, the Gurumdi of the Kirghiz.

The space between the Alaï and Trans-Alaï is regarded as forming a separate plateau, a sort of advanced platform or landing-place in the descent from the "Roof of the World" down to the Ferghana valley. It forms the bed of a dried-up lake, at its most elevated place, no less than 24 miles broad, and stretching in a narrower channel north-east and south-west. The upper part, known as the Bash-Alaï, or "Head of the Alaï," is the "Paradise" of the Kirghiz, though a

Fig. 88.—The Alaï Plateau.
Scale 1 : 640 000.

12 Miles.

paradise they can visit only for three or four months in the year. It forms the water-parting between the Oxus and Kashgar basins, and the two streams that here take their rise are both called the Kizil-su, or "Red River," from the colour of their banks. Most of their tributary rivulets have also a reddish tinge, due no doubt to the clays deposited by the old glaciers. In those flowing towards the Western Kizil-su, the Surgh-ab of the Tajiks, Fedchenko discovered a species of trout not met with in any other Turkestan river, and probably allied to that found by Griffith in another tributary of the Oxus near Bamian. This fish seems to have been driven by the change of climate from the plains to the mountain torrents.

SHCHUROVSKIY GLACIER.

West of the Isfaïram and Kara-kazik Pass the Alaï rises gradually in a parallel line with some northern ridges traversed by the streams flowing to Ferghana. It is connected by spurs with these ridges, the whole constituting, north of the sources of the Zarafshan, a highland region rising 6,000 or 7,000 feet above the snow-line, and sending down mighty glaciers to the surrounding upland valleys. From the highest peak of these highlands, the culminating point of the Alaï proper, the Shchurovskiy glacier flows northwards, while from the slopes of the Khotur-tau and neighbouring mountains there descend numerous torrents and cascades, a phenomenon elsewhere as rare in the Central Asiatic highlands as on the slopes of the Caucasus. Here the forests, far inferior in beauty to those of Europe, are composed largely of the *archa*, a species of juniper (*Juniperus pseudo-sabina*), which flourishes at an elevation of 5,000 feet and upwards.

Fig. 89.—The Shchurovskiy Glacier.
Scale 1 : 320,000.

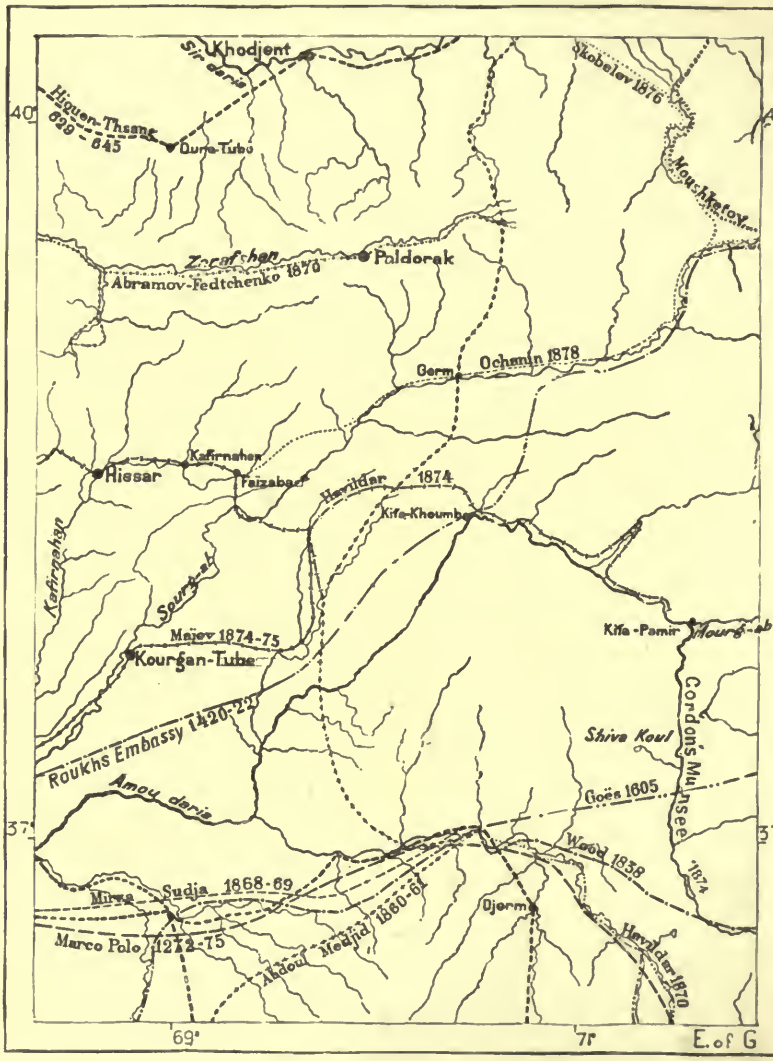
6 Miles.

The Kara-tau, which forms a western continuation of the Alaï, maintains an altitude of over 13,000 feet to the south of Tashkend, beyond which it falls somewhat rapidly in the direction of Samarkand, while throwing off at a sharp angle another spur towards the north-west. The various sections of these mountains, which are interrupted by broad gaps, are known by different names, such as the Ura-tepe, the Julan or Sausar-tau, Kara-tau, and Nura-tau.

The parallel ridges running between the Alaï and Western Pamir have a greater mean altitude than the outer chain; but they are divided by mountain torrents into a number of distinct fragments, nowhere forming any decided water-parting. Thus the Trans-Alaï is divided on the west of the Karateghin Mountains by the Ters-agar, whence flow two streams in opposite directions, northwards to the Tuz-altin-dara, a tributary of the Surgh-ab, southwards to the Muk-su. Farther west the Surgh-ab itself pierces the Karateghin range to effect a junction with the

Muk-su, which is formed by three head-streams, one of which is fed by a glacier over a mile broad, and at its lower extremity about 100 feet thick. The Sel-su valley is filled by a still larger glacier, at least 10 miles long, which Oshanin, the first explorer of this region, has named after the celebrated traveller Fedchenko.

Fig. 90.—Routes of Explorers in the Western Pamir.
According to Krapotkin. Scale 1 : 3,600,000.



60 Miles.

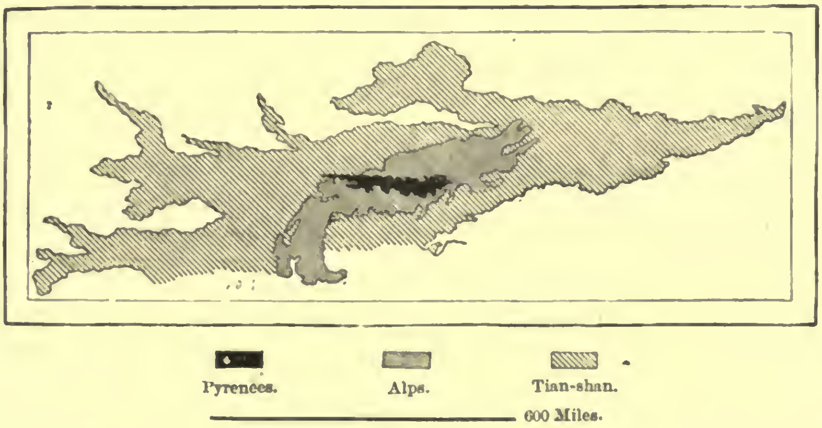
West of the Alaï, where all the parallel chains converge in a snowy plateau sending down glaciers to the surrounding cirques, the two parallel Zarafshan and Hissar ranges are also pierced by river valleys. But here the chains begin to branch off like a fan, gradually falling towards the plains, where they reappear here and there in isolated rocky eminences. Between Samarkand and Hissar some

of the peaks still rise above the snow-line, and although less elevated than the Kaufmann Peak of the Trans-Alaï, they perhaps present a grander appearance, thanks to their greater relative height above the surrounding district.*

III.—THE TIAN-SHAN.

Of the Asiatic mountain systems sloping northwards this is the largest both in extent, elevation, the abundance of its snows and glacier masses. The title of Tian-shan, or "Celestial Mountains," was conferred on it by the Chinese, doubtless from the elevation of its snowy peaks blending with the fleecy welkin. Its lofty crests have ever formed one of the chief barriers to migration, conquest, and commercial intercourse, and these mountains have at all times been avoided eastwards by the Zungarian passes. Till recently the Russians themselves, notwithstanding their military resources and superior culture, have stopped short at the northern base of

Fig. 91.—Relative Area of the Tian-shan, Alps, and Pyrenees.
Scale 1 : 24,000,000.



the range, which for them formed the limit of the known world, and which was masked by vast deserts, swamps, and shallow lakes. Its passes are approached by no great river valley except that of the Sir-daria, which, like all the other streams flowing from the Tian-shan, is lost in a land-locked lake. Although forming the chief mountain mass of Asia north of the Himalayas and Kuen-lun, this range is nevertheless of far less hydrographic importance than the secondary

* Chief elevations of the Pamir and Alaï system:—

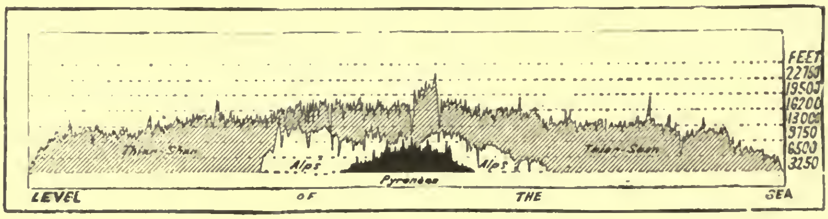
Pamir.	Feet.		Feet.
Kizil-art Pass	14,240	Bash-Alaï	11,000
Kara-kul	13,400	Alaï-tagh, highest point	19,330
Uz-bel Pass, south of Kara-kul	15,100	Alaï-tagh, mean height	16,000
Snow-line	15,500	Shchurovskiy Glacier, lower extremity	11,900
		Kaufmann Peak, Trans-Alaï	25,000
Alaï.		Ters-agar Pass	9,850
		Trans-Alaï snow line	14,160
Terek-davan	10,460	Shelveli	25,000
Isfaïram	12,000	Saudal	25,000
Kavuk	13,300	Chabdara (Hissar Mountains)	18,600
Kara-kazik	14,630	Hasreti-Sultan	15,000

masses, where rise the great Siberian rivers—Ob, Yenisei, and Lena. The Tian-shan is, in fact, entirely comprised within the central region of the continent, which has an exclusively inland drainage. It belongs to the region of steppes, deserts, half dried-up lakes and saline marshes, which form the "inner continent" enclosed within the Asiatic mainland. Nor is it inhabited except very thinly in the valleys, on its outskirts, and on some of its plateaux, so that while twenty-five times larger, it has less than one-tenth the population of the Swiss Alps. It also forms an ethnical and political parting-line, on the one hand limiting the domain of the Mongolians, Kirghiz, Zungarians, and Tajiks, on the other forming almost everywhere the political frontier of the Russian and Chinese Empires.

According to the most recent surveys this system forms altogether a more extensive highland mass than all the European mountains collectively, from the Eastern Carpathians to the Sierra Nevada. The term Tian-shan, restricted by Semyonov to the crests north of the Issik-kul, and by Humboldt to the chains between the rivers Narin and Kashgar, is extended by Hwen-T'sang to the region

Fig. 92.—Relative Relief of the Tian-shan, Alps, and Pyrenees.

Scale 1 : 24,000,000.



Vertical fifty times larger than the Horizontal Scale.

600 Miles.

east of the Khan-tengri, and the geographic unity of the vast highland tract stretching from Zungaria to the Turkestan ranges has now for the first time been recognised by Sieverzov. "As I proceeded south-westwards," says this traveller, "I had snowy crests for months together on my left. After passing the Ala-tau of Semirechinsk, I sighted the white Talgar and the other peaks of the Ala-tau beyond the Ili. The Alexander Chain was succeeded still by others and others, and the Celestial Mountains seemed to continue in an endless line of sierras."

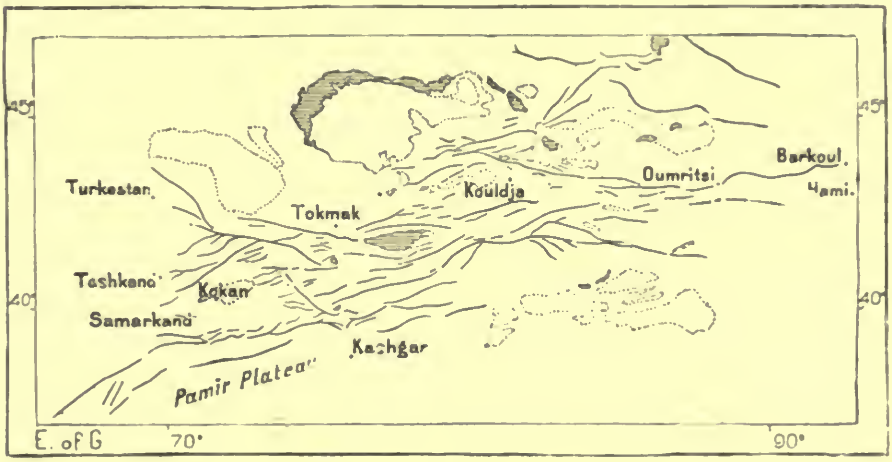
Orographic System.

The Tian-shan begins in Mongolia with a simple rocky crest rising above the bed of the "Dried-up Sea," the Han-hai of the Chinese. But this crest, which runs west-south-westwards, is soon joined by a second, and then by several others, connected by intermediate plateaux, and broadening their bases till they have stretched across 8° of latitude. Towards the centre the plateau supporting the ranges gradually narrows, and the parallel ridges become reduced in numbers, until at last the Tian-shan, towards its western extremity, loses its name and merges with a few rocky eminences in the Turkestan lowlands. The various chains running

east and west are collectively about 1,500 miles long, with a mean breadth of at least 240 miles, and a total area of 400,000 square miles.

All the ridges do not run uniformly east-north-east and west-south-west, or simply east and west, for several stretch in parallel lines south-east and north-west, or else east-south-east and west-south-west. These last are formed of diorites, while the main chain consists of granites and syenites. The whole system is intersected by one only of the secondary chains, that which skirts the Ferghana plains on the east, forming the western escarpment of all the central plateau. The outer chains spread out like a fan beyond the main range, thus enclosing valleys of triangular shape. The Sir-daria and its tributaries, like the other streams flowing to the steppe lakes, run first eastwards through one of the intermediate valleys of the Tian-shan proper, and are then deflected north-west by the outer chains. In the heart

Fig. 93.—Chief Crests of the Tian-shan.
Scale 1 : 22,000,000.



○ Old Lakes.
600 Miles.

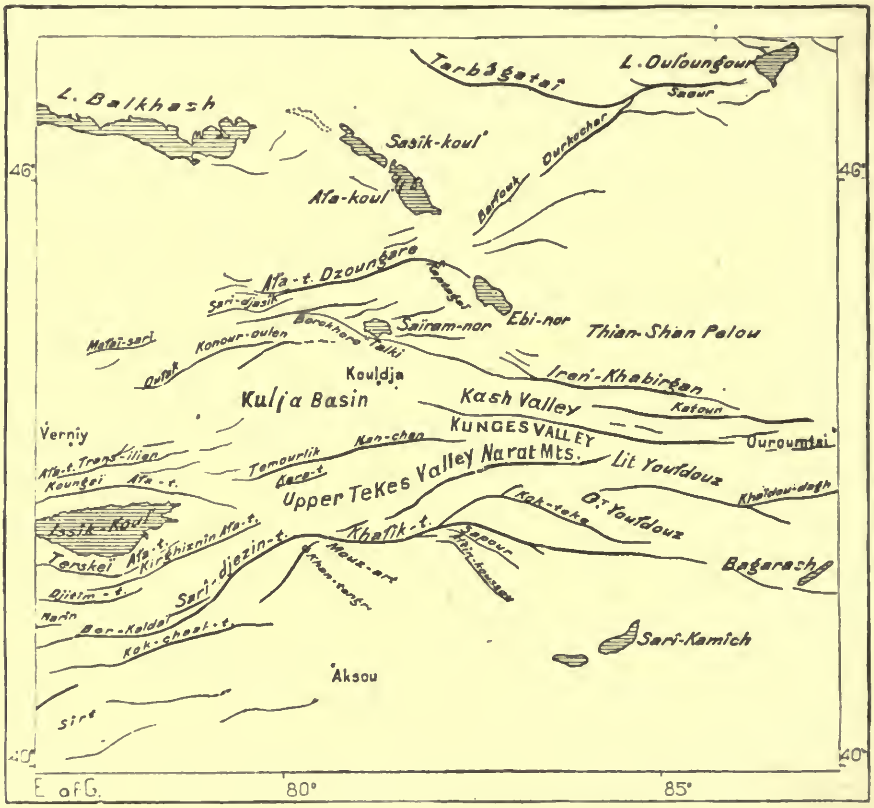
of the system all the valleys, like those of the Alaï, Pamir, and East Siberia, belong to very old geological epochs, for triassic and Jurassic strata have here been regularly deposited between the crystalline, Devonian, and carboniferous crests of the main ranges. Here are also vast layers of loess, in some places 1,000 feet thick, and by their uniform yellow-grey colour imparting a wearisome monotony to the landscape.

Till the middle of the present century the Tian-shan was one of the least-known regions on the globe. But since then the steady progress of Russian power and influence has enabled many explorers to traverse it in every direction, so that little remains to be done beyond making a more exhaustive study of its structure and products. The work of exploration begun in 1856 by Semyonov has been ably continued by Valikhanov, Golubev, Venyukov, Sieverzov, Reinthal, Mushketov, Prejvalsky, Regel, &c. Valuable itineraries remain still to be published, which will probably clear up many doubtful points, and help to remove the confusion occasioned

by the various Tatar, Zungarian, Russian, and Chinese nomenclatures. Great uncertainty also sometimes prevails regarding measurements, the various barometrical and other estimates of altitudes often presenting discrepancies of several hundred feet.

The Tian-shan proper begins about 120 miles east of the town of Hami (Khamil), and soon reaches an elevation of from 7,000 to 10,000 feet. The Kosheti-davan Pass, on the route between Hami and Barkul north and south, is no less than 9,100 feet high, an altitude probably maintained as far west as the Bogdo Mountains. But immediately beyond this point there occurs a profound gap

Fig. 94.—Eastern Chains of the Tian-shan.
Scale 1 : 8,600,000.



240 Miles.

through which runs the road from Urumtsi (Umritsi) to Turfan and Pishan. All this section is encircled by a narrow belt of verdure, watered by streams flowing in parallel channels from the gorges, and soon losing themselves in the sands, or expanding into morasses on the lowlands. Around this green belt there stretch westwards two inlets of the old Asiatic Mediterranean, which have been gradually changed to *gobi*, or deserts. The hills between Barkul and Hami, thus rising like a headland above the wastes, have played a prominent part in the history of the world. Standing like a barrier between two great historical highways, they deflected the westward waves of migration, some to the Tarim basin and Kashgaria,

others through the narrow Nomin-mingin-gobi gateway between the Barkul Hills and the advanced spurs of the Altaï north-westwards to Zungaria. Here the Mongolians were easily enabled to skirt on the north the whole Tian-shan system by availing themselves of the numerous passes opening westwards to the Ili basin, north-westwards to Lake Balkhash, northwards to the Black Irtish and Lake Zaïsan. These depressions between Mongolia and Siberia have a mean altitude of probably not more than 3,300 feet, and the highest point on the route from Barkul north-west to the Black Irtish is only 2,545 feet. The existence of an oblique chain, supposed by Richthofen to run north-west from Barkul to the Tarbagatai Mountains, has not been confirmed by Potantin's explorations, though a small ridge runs from the extremity of the Tian-shan at Barkul in a north-westerly direction, again joining the main range west of the town. This is the outer rim of an ancient lake, of which nothing now remains except the small Barkul basin, to which this town owes its Tatar name. Beyond the Barkul heights nothing occurs in the north-west as far as the valley of the Black Irtish, except irregular masses representing the islands and peninsulas of the old sea flowing between the Altaï and Tian-shan highlands.

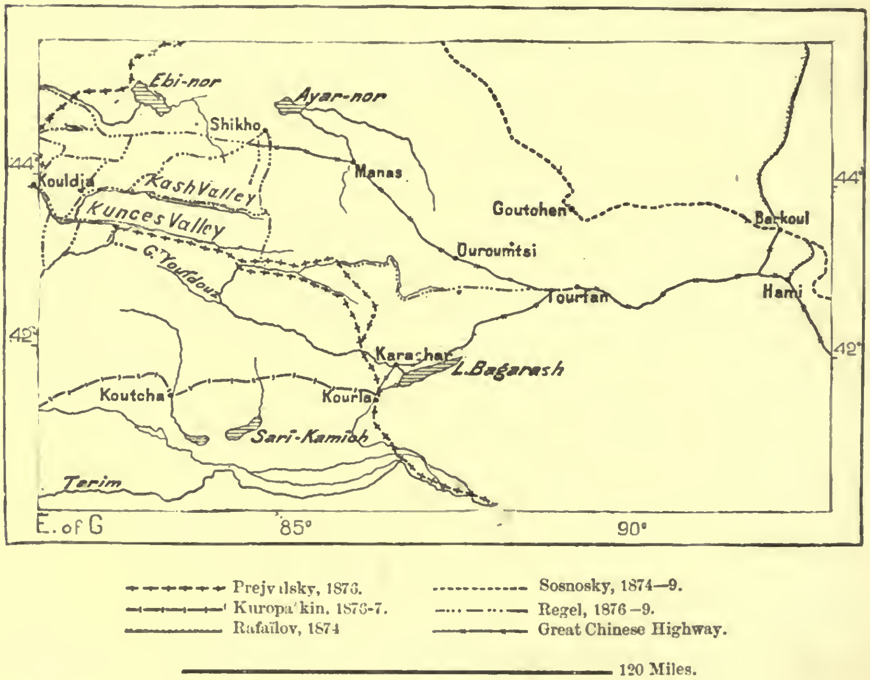
Katûn and Yulduz Highlands.

West of the Urumtsi defile and of the old Turfan inlet the main range rises above the snow-line, and takes the name of Katûn, or Katîn. This section, one of the least known in the system, is probably one of the highest, and undoubtedly exceeds 16,000 feet. No mention is made by the Chinese writers of any pass over it, and all the caravan routes skirt it east and west, while the lakes on both sides of the chain seem to point at extensive snow-fields on the uplands. Regel recently found vast glaciers about the sources of the Kash, which flows from the Katûn highlands westwards to the Kunges and Ili. Here the Tian-shan system develops into several parallel ridges, while south of the Katûn runs another chain through whose gorges the torrents from the main range escape to the plains. West of one of these gorges, traversed by an affluent of Lake Bogla-nor (Bostan-nor, or Bagrach-kul), the Tian-shan forms four parallel snowy ridges, known, like the neighbouring lake, by several different names, and enclosing two vast basins over 7,000 feet high. These so-called "stars" (Great and Little Yulduz) are the beds of old lakes, which now form natural pasture-lands watered by streams flowing to Lake Bogla-nor. It was in one of these vast cirques that Tamerlane, on his expedition against Kashgaria, assembled five armies from five different points of the Tian-shan, and ordered them to exterminate all the inhabitants of the land between Lakes Zaïsan and Bogla-nor north and south. The imperial tent stood in the middle of the plain, and the "Destroyer of the Universe" ascended his golden throne glittering with gems, and round about were the less sumptuous, but still gorgeous tents of his emirs. All received rich presents, and the troops were inflamed with rapture. These grazing grounds are the "Promised Land" of the nomad pastors, who here find the richest pastures for their flocks, and the finest climate, free even in summer from flies and mosquitoes. Yet Prejvalsky found this

magnificent region completely abandoned in 1876. Plundered in 1865 by the Moslem Zungarians, the 50,000 Yulduz nomads had been driven, some south-eastwards to Lake Bogla-nor, others north-westwards to the Ili valley. Left thus masters of the wilderness, the wild ruminants have here become very numerous. Among them are the *Ovis poli* in flocks of thirty to forty, the mountain goat (*Capra Sibirica*), the *maral*, a species of deer.* But neither the *Ovis karelini*, the *Ovis poli*, nor the argali is anywhere met in the Eastern Tian-shan. The wolf, fox, and other beasts of prey are also numerous in this section of the range, which is the exclusive home of the white-clawed bear (*Ursus leuconyx*).

According to their aspect, the mean direction of the winds, and amount of rain-

Fig. 95.—Routes of Explorers in the Eastern Tian-shan.
Scale 1 : 9,670,000.



fall, the slopes of the Eastern Tian-shan present many striking contrasts. The southern and generally more abrupt slopes, being unable to retain much moisture, are nearly all treeless, while the northern are well wooded, the pine flourishing in some places as high as 8,000 feet, the upper limit of arborescent vegetation. On the northern slopes of the Narat, or Nara-tau, running north of the Little Yulduz,

* Sieverzov tells us that the young horns of the maral, while still filled with blood and not yet hardened, are highly esteemed by the Chinese, who pay from £6 to £20 the pair for them on the Siberian frontier. Hence the maral has always been eagerly chased; and since the wild animal has become rare, the Cossacks of the Kiakhta district have succeeded in domesticating it. Polakoff has recently stated that this industry has become widely diffused in Western Siberia, where tame herds of fifty to seventy head are now to be met. Unfortunately the horns of the domesticated animal have lost many of the qualities for which they are chiefly valued as an article of trade.—Editor.

Fig. 96.

Ovis Karelini. Argali. Ovis Poli.

the forests on the banks of the Zanma consist almost exclusively of the "Tian-shan pine" and of a species of ash, while the apple, apricot, and other fruit trees abound in the Kunges valley, and in most of the basins north of these mountains.

Semirechinsk Region.

After branching off towards the north-west from the main range the northern section of the Tian-shan takes successively various names, such as those of the Iren-khabirgan, Boro-khoro, and Talki. North of the Kulja plain, separating it from the Tian-shan proper, it unites with other parallel ridges in a hilly plateau furrowed by running waters, and forming a promontory above the plains and steppes of Semirechinsk, the "Country of the Seven Rivers." Westwards this plateau ramifies into peninsular chains continued by isolated masses, between which the streams flow to Lake Balkhash, or are lost in the desert. The principal of these masses, which still attain an elevation of over 8,000 feet, rises like a rocky wall between Semirechinsk and the Ili valley, but is crossed by several available passes. Like the main range, it runs south-west and north-east, and this is also the direction of the Zungarian Ala-tau, which branches from the plateau at an acute angle with the Iren-khabirgan chain. This range, which is over 180 miles long, forms the natural frontier of the Russian and Chinese Empires, and is crossed only by two serviceable passes, those of Tentek and Lepsa. The system is continued through Chinese territory eastwards to the Tarbagatai Mountains by the Barluk range, which is over 6,000 feet high.

The space between the Zungarian Ala-tau and the Tian-shan proper forms the Tian-shan-pelu plain, formerly a marine basin, which rises gradually westwards to the elongated plateau, whose northern and southern escarpments are formed by the Ala-tau and the Boro-khoro with the Talki respectively. Lake Saïram, occupying a depression between wooded heights in this plateau, is scarcely 700 feet from the Talki Pass, and at the foot of a steep escarpment, formerly followed by the imperial route from Pekin to Kulja. The lake is slightly brackish, and is 150 square miles in extent, with an altitude, according to Matveyev, of 6,000 feet. It is very deep, and exposed to fierce storms, much dreaded by the Mongolians, who call it the Seri-ob-nor, or "Great Water."

One of the most majestic ranges in the whole Tian-shan system is the Nian-shan, or Temurlik, rising abruptly above the Kulja plains over against the Boro-khoro escarpments. It is sharply defined east and west by the rivers Tekes and Kegen, flowing from the south. The Tekes valley communicates with the Issik-kul basin by the low Santash Pass, on which stands a huge *san-tas*, or cairn, traditionally attributed to the army of Tamerlane. North of this pass the Kegen escapes from its upper valley through the most formidable gorge yet discovered in the Tian-shan. This cleft in the rocks has a depth of from 1,000 to 1,600 feet, between walls in many places rising vertically from the foaming stream. The Kegen is here joined by three other torrents, the three Merke, also rushing through profound cañons of crystalline conglomerates. Through the greater part of the gorge the main stream, here known as the Aktogoï, and lower down as the Charin, falls from ledge to ledge in white masses of foam, while elsewhere its black waters are collected in deep and apparently motionless pools. From the bottom of this abyss the projecting rocks completely shut out the heavens, and the explorer seems lost in the bowels of the earth.

The Charin, which is the largest affluent of the Ili, is accompanied on the west by another river, the Chilik, separated from it by the Jalanash plateau, a lofty steppe said to be 4,000 feet high, and contrasting with the surrounding mountains in the total absence of trees and the general poverty of its fauna and flora.

Ala-tau Highland.

The two parallel ranges running north of the Issik-kul basin are both known by the somewhat common Tatar name of Ala-tau, or "Chequered Mountains," that on the north being the Ala-tau beyond the Ili, the other the Ala-tau Kungei. They really form but one granite ridge, intersected longitudinally by a limestone valley,

Fig. 97.—The Aktogoï Defile.

Scale 1 : 900,000.

12 Miles.

whence flow, on the one hand, the Chilik, on the other the Great Kebin, a main head-stream of the Chu. Thanks to the neighbourhood of Verniy, these highlands are amongst the best known in the whole Tian-shan system. Consisting chiefly of granites, with some metamorphous schists, limestones, and sandstones, the Northern Ala-tau is flanked towards the steppe by low porphyry hills strewn with erratic boulders from the main range. The remains of moraines are still visible in several valleys, and an enormous glacier formerly filled all the upper cirques whence flows the Turgen. At present there is not a single glacier in either of the Ala-tau ranges, although rising towards the centre above the snow-line, which is here about 11,000 feet above sea-level. Here the pine flourishes between 5,800 and 8,600 feet. But the apple and other leafy trees have been mostly destroyed by the improvident Cossacks and other Russian settlers in this region.

The two Ala-tau chains, which have a total length of about 150 miles, are limited eastwards by the San-tash Pass and the Aktogoï defile, westwards by the Büam defile, which is traversed by the river Chu, and which separates them abruptly from the Alexander Mountains. This gloomy gorge is strewn with enormous blocks, between which rise fantastic porphyry pillars. But it lacks the savage grandeur of the Aktogoï gorge. Below the junction of the Great Kebin the Chu crosses the western continuation of the Northern Ala-tau, after which it receives the Little Kebin at the head of a broad plain skirted by two detached branches of the Tian-shan, which merge gradually with the desert. The southernmost of these chains, another Ala-tau, now more usually known as the Alexander Mountains, is a snowy range running east and west over 180 miles, and culminating with the Hamîsh, or Mount Semyonov of the Russians.

Lake Issik-kul and Western Tian-shan Highlands.

The geographical centre of the whole Tian-shan system is the Great Issik-kul, or "Hot Lake," as it is called by the natives. It is encircled on all sides by mountains, on the north by the Ala-tau Kungei, on the south by the Ala-tau Terskei, the vast amphitheatre forming an oval tract of over 400 miles in circumference. The Issik-kul is not only the largest lake in the Tian-shan highlands, but the only great survivor of the numerous reservoirs that formerly filled the basins between the parallel ridges. But it was at one time far larger than at present, as shown by the water marks on the hillsides 200 feet above its actual level, and in the Büam defile, 30 miles west of its present limits. Even in the ten years from 1867 to 1877 it has fallen nearly 7 feet, implying at least a temporary, if not a permanent, drying up of the land. The river Chu, which formerly flowed to its western corner, now reaches it only through the sluggish and intermittent Kutemaldi, which is flooded only during the freshets and melting of the snows. According to a Kirghiz tradition the Kutemaldi was dug by the inhabitants of the country, anxious to get rid of the Issik-kul, but, owing to a miscalculation, they gave a new affluent instead of an outlet to the lake. Yet, although it has no present outflow, it is about ten times larger than Lake Geneva, its area being estimated at 2,300 square miles.

It stands some 5,000 feet above sea-level, but never freezes, whence, according to Sieverzov, its name the "Hot Lake," though this title is more probably due to the numerous hot springs round its shores. The lake is slightly brackish and teems with fish, of which, however, not more than four species have been discovered in its clear blue waters. In 1872 the first boat worthy of the name was launched on its surface ; yet its desert shores seem to have been formerly thickly peopled. Crania, bones, and various objects of human industry are occasionally thrown up by the waves, and bits of iron and potsherds have been found by Kolpakovsky at a depth of 3 or 4 feet.

East of Lake Issik-kul are grouped the Khan-tengri Mountains, which may be regarded as the dominant mass of the whole Tian-shan system. Although exceeded in height by the principal Trans-Alaï peaks, the Khan-tengri contains the greatest

number of snowy crests, glaciers, and streams flowing to the four points of the compass, and it is also crossed by the most frequented pass between the northern and southern slopes, and leading from Kulja to Eastern Turkestan.

The Khan-tengri forms part of the southern chain, which begins south of the Great Yulduz basin, and runs under divers names thence westwards. To the Kok-teke succeeds the Geshik-hashi, beyond which follow the Shalik-tau and the Muz-art-tau, which last is crossed by the broad but dangerous Muz-art Pass, at a height, according to Regel, of about 11,600 feet. The passage is easier in winter than summer, the crevasses being then filled with frozen snow, but although it has been crossed by Kaulbars, Kostenko, Dilke, Regel, and others, no European traveller has hitherto continued the journey southwards to Kashgaria.

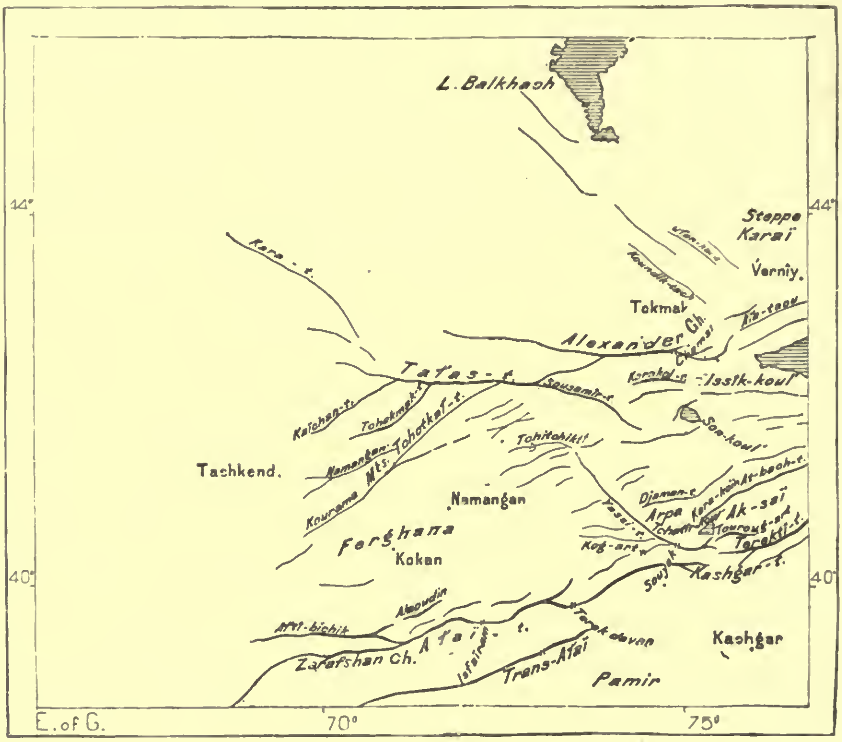
West of the Muz-art stretches a world of glaciers and lofty crests in a highland region, of which little is known beyond the fact that several of its glaciers, especially that at the source of the Sari-jassi, a tributary of the Tarim, are comparable in length to the Aletsch glacier in the Valais Alps. From the Muz-art-tau to the western extremity of the Sari-jassin-tau the snowy range maintains for over 60 miles a mean elevation of more than 16,500 feet. All the peaks overtop Mont Blanc by at least 3,000 feet, and southwards rises in solitary grandeur the Khan-tengri, or Kara-göl-bas.

Beyond a chaos of peaks, whence flow the head-streams of the Tarim and Sir, the mountains resume their normal direction from east to west. They form with their parallel chains an enormous mass, no less than 210 miles broad north of Kashgar. The outer are far more elevated than the central ridges, between which flows the Narin, the chief affluent of the Sir. Although pierced at intervals by streams running south-eastwards to Kashgaria, the Kok-shaal, or southern range, maintains a mean altitude of over 15,000 feet, while several summits in the Kok-kiya section exceed 16,600 feet. These highlands, whose escarpments slope towards Chinese Turkestan, are amongst the least-known regions of the continent, although crossed towards their western extremity by the Turug-art, an easy pass well known to traders. It is a very barren region, with bare hills and scattered ridges, between which are the channels of dried-up rivers. The slope is very gentle even northwards to the Ak-sai plateau and the Chatir-kul. This lake, which is said to be destitute of fish, is all that remains of an extensive inland sea formerly flowing between the southern range and the parallel Kubergenti, Ak-bash, and Kara-koin chains on the north. Although it has no apparent outlet, its waters are still quite fresh. The hills skirting it northwards are crossed by the Tash-robat Pass, which, like the Turug-art, is open all the year round to the caravans between Verniy and Kashgaria.

West of the Turug-art the southern range attains a great elevation, and from a pass on a parallel chain north of it Osten-Sacken distinguished no less than sixty-three snowy peaks. It runs at first north-east and south-west, then turning west and north-west in a line with the extreme spurs of the northern chains, and intersecting the parallel ridges of the Central Tian-shan in such a way as to intercept their waters. But the innumerable lakes thus formed have now run dry, mainly through

the defile by which the Narin escapes westwards. Here the Tian-shan system is completely limited by the Ferghana plains, but at the south-west corner of the Tian-shan proper various offshoots run south-westwards, connecting the main range with the Alaï and the Pamir. But till the beginning of the tertiary period a large marine strait still connected Ferghana and Kashgaria through the Kog-art, thus completely separating the Pamir from the Tian-shan plateau. The whole Tian-shan system was at that time crossed from north-east to south-west by a

Fig. 98.—Western Chains of the Tian-shan.
Scale 1 : 9,000,000.



240 Miles

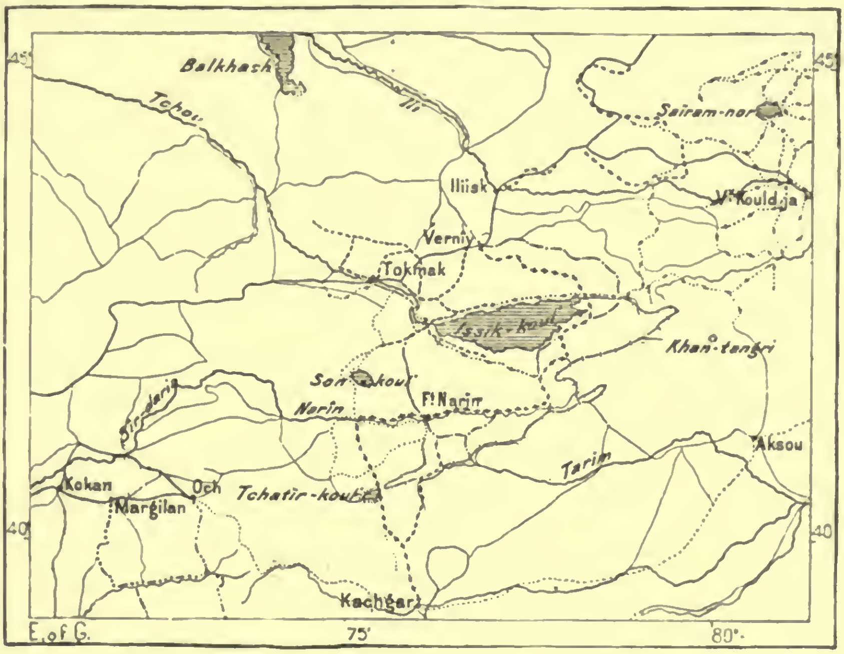
chain of inland seas, of which all that now remains is the Issik-kul. Those of Kulja and Ferghana have long been drained off.

North of the Upper Narin valley the main range is known as the Terskei Ala-tau, or Ala-tau "of the Shade," in contradistinction to the Kungei Ala-tau, or Ala-tau "of the Sun," skirting the other side of the Issik-kul. Owing to the greater moisture of its slopes the former is far better wooded, the pine forests and pastures at many points reaching the snow-line. It culminates with the Ugus-bas, which attains an elevation of over 16,500 feet. Near the Barskaûn Pass, on its southern slopes, rises the Narin, chief head-stream of the Sir, while other affluents flow from the southern region of the Ak-shiirak glaciers, south of which rise the farthest sources of the Kashgarian Ak-su. A large portion of the country comprised between the Terskei Ala-tau and the Kok-shaal north and south forms an extensive plain, or

sirt, strewn with sandstones, many-coloured marls, gypsum, and saline incrustations, and studded with tarns, but nearly destitute of vegetation. This bleak region is exposed to snow-storms even in June and July, and in some years the snow never melts in the hollows throughout the summer.

The Terskei Ala-tau is continued westwards under divers names, as are all the parallel chains with which it is connected by transverse ridges. The lacustrine plains are probably more numerous here than elsewhere in the Tian-shan system. But of all the formerly flooded basins one only remains, the Son-kul, a fresh-water lake about the size of Lake Geneva, encircled by steep sides of green porphyry, and

Fig. 99.—Routes of Explorers in the Western Tian-shan.
Scale 1 : 9 000,000.



Postal Highways.
Rivers Routes.
Valikhanov, 1858.
Golubev, 1859.
Venyukov, 1859-60.
Sieverzov, 1854–68.
Osten-Sacken, 1867.
Reinthal, 1868.
Kaulbars, 1869.
Kostenko, 1876.
Kuropatkin, 1876-7.
Prejvalsky, 1877.
Regel, 1876–9.
Forsyth, 1874.
120 Miles.

draining through a small stream to the Narin. One of the most remarkable of these dried-up plains is the Kashkar valley, source of the Kashkar, the main head-stream of the Chu. It communicates by the Shamsi Pass with the northern plain.

North of Kokan the Tian-shan is continued by the Talas-tau, from 2,500 to 3,000 feet high, which branches off in several ridges from the Alexander Mountains, and falls gradually south-west, west, and north-westwards to the steppes. The Kara-tau, or "Black Mountain," the last spur of the Tian-shan towards the north-west, seldom exceeds 6,500 feet in height, but is geographically of great importance, as forming the water-parting between the Sir and Chu basins. It also abounds most in coal, iron, copper, and argentiferous lead.

The contrast between the Eastern and Western Tian-shan highlands is, on the whole, obvious enough. The former are far more compact, with fewer lateral ridges and valleys, and presenting more the appearance of a plateau crossed by lofty parallel chains. Notwithstanding the great age of its rocks, the Tian-shan has preserved its primitive aspect far better than the Swiss Alps. It is less worn by rains, snows, and glaciers, and its slopes have been clothed with a broad belt of forest vegetation rising at least 2,500 feet above the level of the seas, which formerly washed its base. Hence considerable differences have arisen in the way in which its flora and fauna have been distributed. Whilst the Alps have been invaded by the forest species of the surrounding plain after the retreat of the ice, the lower zone of the Tian-shan has been the point of dispersion for the species spreading upwards to the higher valleys, and downwards to the surrounding steppes, according as the waters subsided.

The history of their inhabitants may also be explained by the relief and geographical position of these highlands. The steppes, or ancient lacustrine basins encircling them, being mostly incapable of cultivation, are mainly occupied by nomad pastors, who have even prevented agricultural peoples from settling in the upland valleys. Hither they resort themselves with their flocks in summer, so that the whole region has been held by these nomad tribes from time immemorial. Split up into small communities by their conflicting interests, and constantly at feud for the possession of the richer pastures, they were unable to unite in compact masses against the common enemy, and Chinese, Mongolians, and Russians have thus easily succeeded in successively subduing the Tian-shan highlands. The Russians took a hundred years to subdue the Caucasus, whereas a few sotnias of Cossacks overran the valleys of the boundless Tian-shan almost without exchanging a shot. Historically as well as hydrographically this region belongs to a land-locked basin.*

* Chief elevations of the Tian shan system:—

	Feet.
Eastern Tian-shan.	
Kosheti Pass	9,100
Katûn Mountains	15,660
Little Yulduz Plateau	8,000
Great Yulduz ,,	6,000
Narat Pass	9,950
Tian-shan, north of Kulja.	
Boro-khoro Mountains, mean height	6,500
Sitirti Pass	5,860
Talki ,,	6,360
Altin-imel Pass	6,050
Kaptagaï ,,	4,430
Town of Kulja	2,100
Central Tian-shan.	
San-tash Pass	6,750
Khan-tengri	24,000
Muz-art	11,160
Ugus-bas	17,760
Barskau Pass	12,000
Zaüka ,,	12,975
Upper Narin Valley	11,660
Talgar (Ala-tau beyond the Ili	15,300
Almati ,, ,,	14,000
Lake Issik-kul	4,380
Fort Narin	6,870
Verniy	3,100
Western Tian-shan.	
Turug-art Pass	11,660
Kara-bel ,,	12,940
Kog-art ,,	10,675
Tash robat ,,	13,100
Chatir-kul ,,	11,130
Son-kul ,,	9,550
Shamsi ,,	12,025
Hamish (Alexander Chain)	15,550
Kara-bura (Talas-tau)	11,000
Min-jilke (Kara-tau)	7,000
Kokan	1,310
Tashkend	1,506
Upper limit of trees	9,000 to 10,000

IV.—TARBAGATAI HIGHLANDS AND BALKHASH BASIN.

The space, about 240 miles broad, separating the extreme Eastern Tian-shan and the Zungarian Ala-tau from the Altaï system, doubtless offers wide openings between Mongolia and Asiatic Russia. But apart from these historically important routes, the plateaux and mountains are so disposed as to form a sort of isthmus between the Tian-shan and Altaï highlands. Of this isthmus the central mass is the Tarbagatai—that is, the "Tarbagan," or "Marmot" Mountains—which run mainly east and west, and are about equal to the Pyrenees in length and elevation, their chief peaks scarcely exceeding the Nethu or Mont Perdu of that range.

Like the Tian-shan, the Tarbagatai presents two different axes, one running north-east and south-west, the other north-west and south-east. The first, which is parallel with the Southern Tian-shan, is followed by the Barluk and Ur-koshar, forming the southern range, and with some of its crests reaching the region of perpetual snows. The northern or main chain runs parallel with the Northern Tian-shan, and both axes converge eastwards, here culminating above the plains of the Irtish with Mounts Saûru and Muz-tau. The ravines of these snowy mountains are filled with glaciers, which at some points descend below the forest zone. But in all other directions the range rapidly falls, westwards with the volcanic Mantak, eastwards with the Kara-adîr ridges, and northwards offering an easy passage from the Balkhash slope to that of the Orkhu-nor in Mongolia.

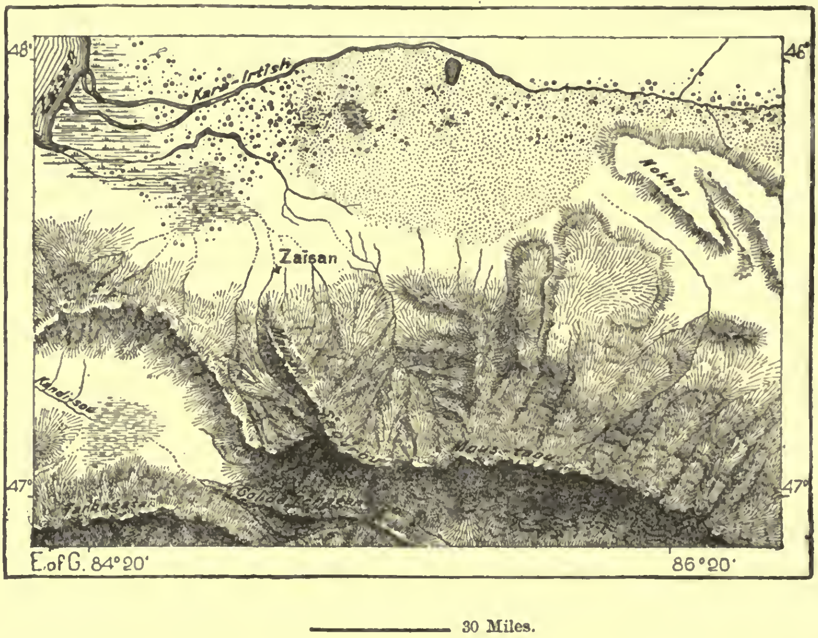
The Tarbagatai proper is separated from the other chains by low depressions, scarcely more than 3,300 feet above sea-level. Here we ascend the streams flowing from the water-parting almost imperceptibly, and no mountains are visible except at a great distance; but the heaps of stones disposed like moraines bear evidence of former glacial action. West of these depressions the Tarbagatai rises gradually, though even here few of its peaks reach the snow-line. On the southern slope the only snowy crest is the Tas-tau, culminating point of the Marmot system. Except along the banks of the torrents the heights are mostly treeless, but covered with rich Alpine pastures, the common resort of the nomads from both slopes.

The Tas-tau, which has been ascended several times since the journey of Schrenck in 1840, ends in two peaks, one of which is known to the Chinese as the Bannar Mount, from the yearly practice they had of hoisting a flag on its summit. Both are composed of dolomite and argillaceous schists. Granites and porphyries also enter largely into the constitution of the Tarbagatai rocks, though the most extensive formations seem to be carboniferous limestones, schists, and sandstones. Coal has been discovered on the southern slope near the Chinese town of Chuguchak, and the Russian explorers have found large masses of native copper and iron ores in the ravines. In the northern valley of the Ters-aïrik, sloping towards Lake Zaïsan, about one hundred Chinese gold-washers are employed in collecting the gold dust here mixed with the old alluvia. Some of the numerous mounds scattered over the heights and plains, and which have caused the term *obo*,

or *oba* (tomb, cairn), to enter so largely into the local geographical nomenclature, still contain many gold objects, often collected by the Kirghiz.

The Tarbagatai is usually supposed to terminate at the Kara-kol Pass, or farther west, at the bluffs overlooking the town of Sergiopol. But the system is still continued westwards by the Denghiz-tau, running north of Lake Balkhash, and merging with the water-parting between the Aralo-Caspian and Ob basins. To this system also belong the picturesque Arkat rocks stretching northwards in the direction of Semipalatinsk. All these mountains are crossed by easy passes, allowing travellers to avoid the higher portion of the range between the plains of the great Lakes Ala-kul and Zaïsan. Nevertheless this very section is crossed by

Fig. 100.—Saûru and Tarbagatai.
Scale 1 : 1,900,000.



the Khabar-assu, the most frequented and historically the most important of all the passes. It runs east of the Tas-tau, and has always been much used by the Kashgar traders proceeding to the Troïtzk, Orenburg, and Irbit fairs, and by the Tatars and Russians making their way southwards from the Siberian lowlands. Factories of Bukhariot merchants were formerly established at Tumen, Tobolsk, Tara, and Torusk, and a colony of 300 Mohammedans near Torusk still recalls these commercial relations. But the progress of this country was arrested in 1745 by the vexatious measures of the Russian Government, which established frontier custom-houses, prohibited the trade in rhubarb under pain of death, and finally put a stop to all passenger traffic. But trade has since somewhat revived, and a rich Kirghiz has built a caravanserai on the pass for the convenience of the

LAKES BALKHAS

Drawn by A. Slom.

Height above Sea Level

1000 to 3300 ft. 3300 to 6600 ft. Over 6600 ft.

Scale

0

NEW YORK, D.

AND ISSIK-KUL.

.000,000

100 E. Miles

Depth of Lakes

Under 16 ft. 16 to 50 ft. Over 50 ft.

PLETON & Co.

Sarte merchants, who serve as agents for the exchanges between Russia and China.*

The Pamir and Tian-shan have both an inland drainage eastwards to the Tarim, westwards to the Aralo-Caspian basin. The Tarbagatai alone sends eastwards a few streams to the Irtish, thus belonging partly to the Arctic basin. With this single exception all the Turkestan highlands are comprised in the Central Asiatic inland water systems. Most of their streams flow naturally from the convex side of the vast crescent of plateaux and mountains facing the moist west winds. Hence the largest rivers flow to the Turkestan and Semirechensk plains, and here also are the largest lakes, some of which are vast enough to deserve the name of seas. Nevertheless this hydrographic system is far less important even than that of East Russia, where the Caspian is fed by the Volga, whereas here the Sir and Oxus are lost in the Aral, and the Ili in Lake Balkhash.

Lake Balkhash.

But the geological structure of the land shows that it was formerly far more abundantly watered. Apart from the seas of the tertiary epoch, it is certain that even recently the Balkhash stretched 240 miles farther east and south-east to the depression of the plateau now partly filled by the Ebi-nor, and that towards the west it was four times broader than at present. At that time the Zungarian Ala-tau projected like a promontory in the middle of a continuous sea, now divided into a number of distinct lakes and morasses. The regions formerly under water are indicated by their argillaceous soil, saline wastes, and shifting sands. Even within the historic period the Balkhash formed a single sheet of water with the Sassik-kul, Ala-kul, and Jalanash-kul. In the seventeenth century it is said to have filled all the cavity separating it from the Aral, according to one authority sending two affluents to this basin. But this statement is highly improbable, for certain species of its fauna imply a long period of isolation.

The Balkhash has still a very large area. The Chinese knew it as the Si-haï, or "Western Sea," though this name has also been applied to the Aral and the Caspian. The neighbouring Kirghiz tribes call it either the Denghiz, or "sea" simply, as if there were no other, or the Ak-denghiz or Ala-denghiz, the "White Sea," or "Motley Sea," probably on account of the islands by which its surface is diversified. Third in size of the land-locked basins of the continent, it has an estimated mean area of about 8,700 square miles. But no very exact measurement can be taken of a lake without well-defined contours or solid banks, whose southern shores especially shift with the shifting north and south winds. Its limits

* Chief elevations of the Tarbagatai:—

	Feet.		Feet.
Barluk Mountains, mean height	4,660	Alet Pass	6,000
Jaïrsky Pass	6,036	Tarbagatai, mean height	6,000
Muz-tau (Saûru)	11,330	„ snow-line	9,200
Manrak, highest peaks	5,000	Saûru, snow-line	10,956
Chagan-cbo Pass	4,755	Denghiz-tau, mean height	4,000
Khabar-as-u „	9,570	Arkat	2,560
Tas-tau	9,860		

are lost in one place in extensive marshes and flats, in another in forests of reeds from 12 to 16 feet high, the haunt of the wild boar and of myriads of water-fowl. But the northern shores, formed by the escarpments of a plateau rising in two terraces above the water, are more sharply defined, and are even varied by a few rocky headlands. Here the lake is deep, but elsewhere it is so shallow as to present the appearance rather of a vast flooded morass. The depth nowhere exceeds 70 feet, and as the average seems to be about 30 feet, its volume may be estimated at some 200,000,000 of cubic yards, or twice that of Lake Geneva, which is nevertheless thirty-six times less extensive in superficial area. Its water, which is usually ice-bound from the end of November to the beginning of April, is clear, and abounds in fish, but is so salt, especially in its southern division, that it proves fatal to animals driven by thirst to drink it. Of the other reservoirs in this lacustrine region the Ala-kul is the most saline, while the Sassik-kul is scarcely brackish.

The contrast presented by the two shores of the Balkhash is chiefly due to the relative amount of running water discharged into each. Along the whole northern coast, which, even excluding the thousand little inlets, is about 420 miles long, the lake does not receive a single permanent stream. The Tokrun runs completely dry after periods of long drought, and the same is the case with the steppe "wadies" of the southern shore. But the Zungarian and Trans-Ilian Ala-tau also drain to these plains, and the streams sent down by them are sufficiently copious to reach the lake with their alluvia. The vast semicircle of low tracts formed by these deposits is a striking witness to the influence these waters have had in modifying the geological aspect of the land. At no distant future the sand and soil brought down cannot fail to divide the Balkhash into separate basins, such as those of the lacustrine Ala-kul group.

Semirechinsk River System—The Ili.

The Ili, chief affluent of the Balkhash, is a large river, at least as regards its course, which is no less than 900 miles long. Formed by the junction of the Tekes and Kunges, it receives through the first the icy waters of the Muz-art and of a large portion of the Central Tian-shan, while the Kunges brings it the torrents from the Narat and other chains of the Eastern Tian-shan. In the Kulja plain the Ili flows in a rapid stream in a bed 200 to 400 yards wide, and from 3 to 20 feet deep, skirted northwards by a high cliff, which is formed by the counterforts of the Altin-imel chain. It is navigable for small boats for over half its course, and Iliisk, where it is deflected north-westwards by the outer Tian-shan ridges, is reached during the floods by larger craft from the lake. At a defile marking the limit of its middle and lower course certain Buddhist figures and Tibetan inscriptions on the porphyry rocks seem to indicate that the empire of the Dungans formerly stopped at this point. Farther down, the stream, already reduced by evaporation, enters its delta, which during the floods covers a triangular space of over 5,000 square miles, although at other times the southern branch alone is filled.

Of the other feeders of the Balkhash none are navigable for any considerable portion of the year, and several are even cut off from the lake by strips of sand

for several months together. The Kara-tal, fed by the snows of the Zungarian Ala-tau, is one of the "seven rivers," whence the region comprised between that range and the Balkhash takes the name of Semirechinskiy Kraï, though the terms Country of the Three, Ten, or Twenty Rivers might be just as appropriate according to the number of streams taken into account. The seven more important are the Kara-tal and its tributary the Kok-su, the Biyen, Ak-su and Sarkan, Baskan and Lepsa. The Ili is sometimes added to the number, because the administrative province of Semirechinsk also comprises that basin. The Kara-tal, the longest, though not the most copious, of the seven streams, seems to have been formerly largely utilised for irrigating purposes. The Lepsa, which is the largest in volume of the Ala-tau rivers, unites with the Ak-su at its mouth, and forms a vast delta of shifting channels. Its swamps are the most northern haunts of the tiger. The Aya-guz, sometimes included in the number of the "seven rivers," flows from the Tarbagatai to the eastern extremity of the lake, to which it carries down some gold dust. Its now desert banks are strewn with the ruins of ancient Buddhist cities.

Lakes Sassik-kul and Ala-kul are also fed by streams from the Ala-tau, though the largest affluent of this double basin is the Churtu, Emil, or Imil, flowing westwards from the Tarbagatai. Notwithstanding the general tendency to subsidence, these streams occasionally produce the opposite phenomenon in the Ala-kul, whose level, according to the Kirghiz, steadily rose from the year 1850 to 1862. The districts formerly under water are usually the most sterile, owing to the sands and hard clays mixed with saline particles of which they largely consist. The lakes have thus become deserts, and vegetation has ceased along the shores of the old lacustrine basin. West of the Balkhash the contours of a dried-up sea, equal in extent to that lake, may still be traced north of the Western Tian-shan from the Alexander Mountains to the advanced spurs of the Kara-tau. This basin is now replaced by the sands and clays of the Muyun-kum, or Ak-kum steppe.

V.—THE ARALO-CASPIAN HYDROGRAPHIC SYSTEM.

The Sir and Oxus, the Aral Sea and Trans-Caspian District.

The wilderness of lakes, swamps, and streams, which run dry in summer, and which are partly avoided even by the nomads, forms, at the foot of the wooded Tian-shan slopes, the approach to the vast region of lowland steppes stretching thence across the whole of Turkestan, and beyond the river Ural into the heart of Russia. These steppes present almost everywhere the appearance of boundless and perfectly level arid tracts, though most of them are really rolling lands undulating as regularly as a tropical sea under the influence of the trade winds. But the very uniformity of these waves tends to conceal the intervening troughs, and the traveller is often startled by the sudden disappearance of horsemen, and even of whole caravans, in these depressions. The absence of any landmarks, trees, or buildings which might serve as points of comparison, prevents the eye from forming any estimate of the heights and hollows, while the refraction of the

luminous rays in the morning sun tends to magnify the size of every conspicuous object. Hillocks scarcely 200 feet high appear like imposing eminences, an eagle on the wing revives our reminiscences of the fabulous roc, tufts of herbage assume the proportions of forest trees. With the rising sun the heated and mostly cloudless atmosphere quivers incessantly like the blasts of a furnace, imparting to everything a waving and shifting form, and when the sky is overcast the dense clouds of burning sands envelop all objects in a ruddy glamour.

The monotonous appearance of the steppes is intensified in winter, when the broken surface is smoothed over by the snows. But their diverse aspects are revealed in the early spring, when the swollen streams and meres have assumed their normal level, and the nomads have fired the dry brushwood of the pastures. Now the young plants spring up rapidly, and the arid surface of the land is clothed as by enchantment with verdure and prairie flowers. The variety is enhanced by the varying tints of sands, clays, rocks, sweet and saline waters, and the different character of the soil is clearly reflected in its diversified fauna and flora.

But this springtide splendour and wealth of colour soon disappear. The extremes of temperature, sultry in the hot season, and Arctic in the cold, allow but a few species of plants to flourish, and even these are presently burnt up by the scorching suns. Many grey and dusty tracts then resume their monotonous aspect, again broken only by a brief revival of vegetation during the few rainy days of autumn. But this promised return of spring is soon arrested by the keen winter blasts, nipping the tender herbage and muffling all nature in a snowy mantle. The absence of running waters and the dryness of the atmosphere tend to increase the uniformity imparted to the land by the boundless extent of the plains. The desert begins within 1 or 2 miles of the river banks, stretching thence beyond the horizon in a dreary succession of moving sands, reedy tracts, saline moors or muddy swamps, treacherous quagmires in winter, baked hard as the rock in summer. Yet with endless labour and a careful system of irrigation the Kirghiz contrives to bring a few strips of land under cultivation. By a system of low embankments the land is parcelled into a number of square plots like those of marine salines, and when these are flooded they are successively drained off by openings in the parting dykes. The method of cultivation somewhat resembles that practised in Egypt.

The Turkestan Deserts.

The deserts properly so called occupy probably about half of the whole Turkestan steppe between the Ob basin and the Iranian plateau. In the north the region limited by the lower course of the Chu and Sari-su is usually known to the natives as the Bek-pak-dala, and to the Russians as the Golodnaya steppe, or "Hunger Steppe." South of the Chu stretches the Ak-kum ("White Sands"), while a large portion of the country, limited by the Sir and Oxus north and south, is occupied by the Kizil-kum, or "Red Sands." Between the Sir and Ural Rivers are the Kara-kum, or "Black Sands," but another and far more extensive region of "Black Sands" occupies most of the triangular space bordered north-west by

KIZIL-KÛM DESERT—DUSSIBAI WELLS.

the Uzboi valley, north-east by the Oxus, south by the oases stretching along the foot of the Iranian plateau. Several other smaller sandy wastes are scattered over the rest of Turkestan.

Of these desert regions, which, notwithstanding their different names, are all alike of a greyish colour, few are more dreaded by the Kirghiz than the Bek-pak-dala, whose limestone or argillaceous bed is here and there crossed by *barkhans*, or sandy dunes. It is traversed by the road from Tashkend to Akmolinsk, but the absence of water and fodder obliges the caravans to make long détours. Here the summer temperature rises in the shade of the tent to 97° Fahr., and in the open to 111° and 112°. Even in the cool of the evening the soles of the wayfarer's feet become scorched, and the dog accompanying him finds no repose till he has burrowed below the burning surface. Some of the southern deserts are still more terrible. During the early expeditions against the Tekke Turkomans hundreds were killed by the heat of the sands, while the mortality of those mounted on camels was still greater. The "Black Sands" north of the Aral are more easily accessible, thanks to the parallel depressions running north-west and south-east between lines of dunes 25 to 30 feet high. These depressions are covered with a fine herbage, and even with a few plants, such as the sand osier and the wild olive. They were formerly cultivated, as appears from the still visible traces of irrigating canals. The dunes themselves have a *flora*, consisting of plants whose roots penetrate deeply into the soil in search of moisture. Springs of pure water, supplied by the infiltration of snow and rain, occur here and there at their feet. In some places frozen masses have even been discovered beneath the accumulated sands, by which they were preserved for years from the summer heats.

Many of the argillaceous and salt-strewn steppes are dreaded even far more than the sandy wastes. Here are the most dangerous quagmires, where the camels sink in the mud after the slightest shower. Here also the caravans suffer most from thirst, and although the stages are marked by wells, it often happens that the water has been poisoned by the carcasses of animals. The wells are usually sunk about 12, but occasionally to a depth of 40 feet.

Flora and Fauna of Turkestan.

The feeble Aralo-Caspian flora is limited chiefly to shrubs and thorny plants, the soil being neither rich nor moist enough to develop a forest vegetation. True forests occur only in the north-western tracts watered by the Ural and Emba. The Russians everywhere fell the trees improvidently, while the Kirghiz are never at their ease till they have cleared the land of its timber. But both races alike will respect and regard with a sort of veneration the few solitary trees occurring at intervals in the desert. The branches are often covered with ribbons, horsehair, medals, and other votive offerings, and in passing every devout Kirghiz will piously mutter the name of Allah.

While in some respects resembling those of Russia, the Orenburg steppes have a far less varied flora As we proceed eastwards and southwards in Turkestan the

vegetation everywhere becomes poorer, until we reach the foot of the mountains, where another zone begins. In the whole of this region no more than 1,152 species of phanerogamic plants have been discovered, and in the open steppe far from the rivers the flora is reduced to a few typical species, "brown as the camel's hair," covering hundreds and thousands of square miles. In certain tracts nothing is met except a mugwort of a blackish colour; in others the soil is covered with a blood-red alkaline vegetation. In the space comprised between the Aral and Caspian east and west, and stretching from the Emba to the Atrek north and south, there are only 329 species altogether, less than are found in the smallest French canton.

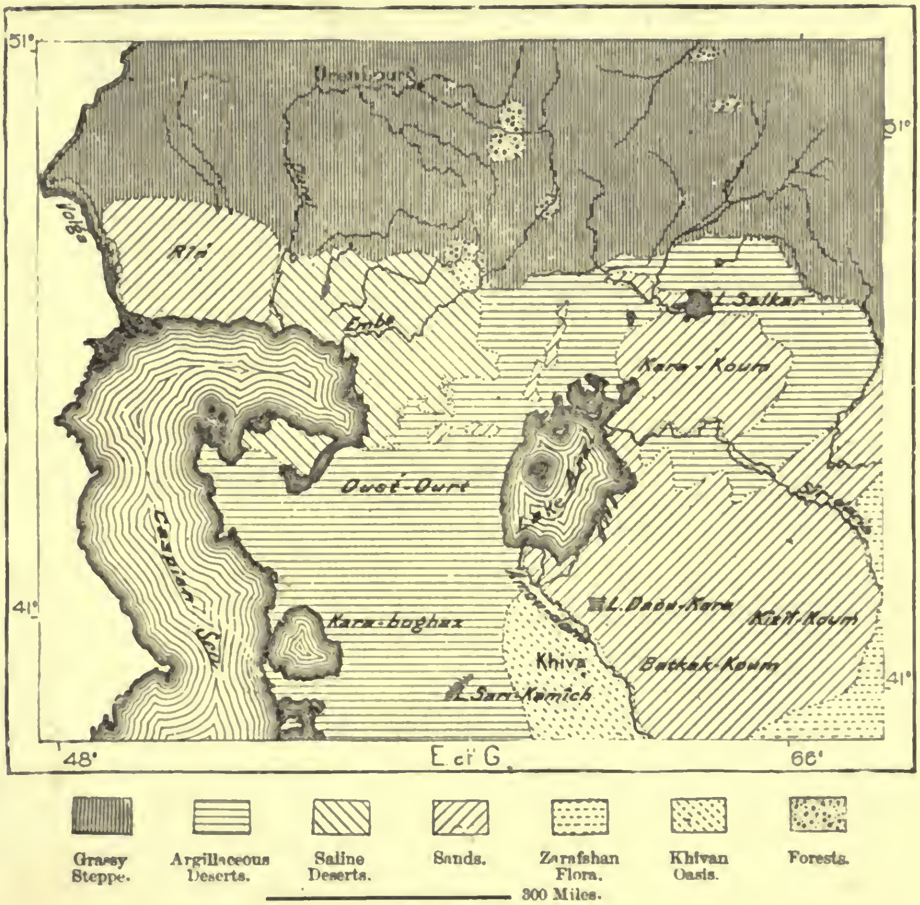
The Turkestan flora, such as it is, is geologically of recent origin. The species have all advanced from the surrounding regions according as the waters subsided.

Fig. 101.—Vegetation of the Kizil-kum.

But in the struggle for the possession of the land the southern have prevailed over the northern species. Thus the *saksaûl* (*Anabasis ammodendron*) and the *jida,* or wild olive, are constantly advancing from Persia, and driving the poplars back to their northern homes. It is interesting to observe how all these plants adapt themselves to the changed conditions of soil and climate in the steppe. To resist the wind they acquire a more pliant stem, or present a smaller surface to its fury by dropping their foliage. To diminish the evaporation their bark becomes a veritable carapace, and their pith is mingled with saline substances. They clothe themselves with hairs and thorns, distilling gums and oils, whereby the

evaporation is still further reduced. Thus are able to flourish far from running waters such plants as the saksaûl, which, though perfectly leafless, produces both flowers and fruits. So close is its grain that it sinks in water, and emits sparks when struck with the axe. The grassy steppes are not covered uniformly with herbage, as in the western prairies, but produce isolated tufts occupying scarcely a third of the whole surface. The short period of growth and bloom is utilised by the plants with remarkable energy. With the first warm days of spring the Orenburg steppes become covered with tulips, mingled here and there with the lily

Fig. 102.—Range of Vegetation in Turkestan.
Scale 1 : 15,000,000.



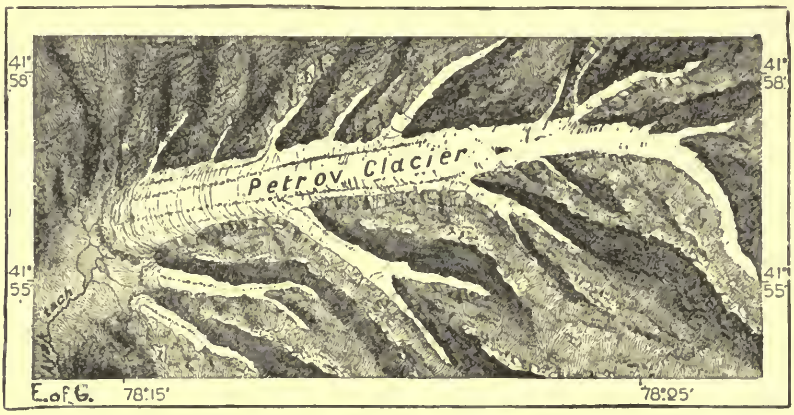
and iris. But in a few weeks the land has resumed its wonted dull grey aspect; the plants have withered and been scattered by the winds.

Like its flora, the Turkestan fauna presents a singular uniformity of types throughout vast spaces. But thanks to the variety of relief between the steppe and the mountains, the species are relatively more numerous. In the Aralo-Caspian basin alone Sieverzov reckons forty-seven species of mammalia and ninety-seven of birds, while all the crevasses in the ground are alive with snakes, lizards, and scorpions. The thickets skirting the rivers harbour most of the quadrupeds—tiger, ounce,

wild cat, wolf, fox, wild boar; but on the open plain nothing lives except gregarious animals, such as the gazelle and wild ass, which are able rapidly to traverse great distances in search of food and moisture. The domestic animals are limited by the nature of the climate to the camel, horse, ass, and sheep. The only settled parts of the land consist of narrow oases constantly threatened by the sands, and often wasted by the locust. But the whole country is inhabited, or at least traversed, by the nomads

Fig. 103.—Petrov Glacier.

Scale 1 : 215,000.



3 Miles.

shifting their camping grounds with the seasons, and tending their flocks now in the open plain, now at the foot of hills and in the neighbourhood of streams and wells.

Water System—The Sir.

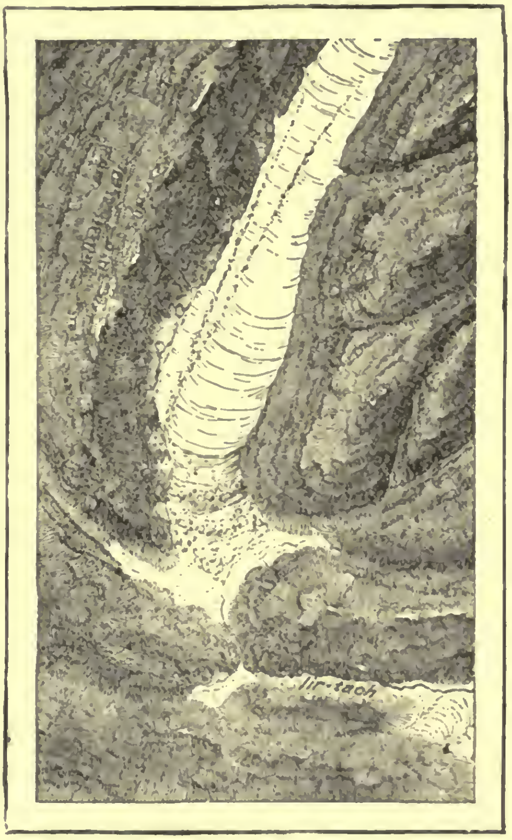
The Aralo-Caspian basin is studded with lacustrine spaces, remnants of the old inland sea of Turkestan. Numerous funnel-shaped cavities also occur, especially north and north-east of the Aral, many from 80 to 100 feet deep, and filled mostly with salt or brackish water, while marine shells are embedded in the clays and sands of their sides. Saline marshes, strewn over the steppe side by side with the fresh-water lakes and tarns, also contain thick layers formed by the remains of marine organisms. These shells of the *cardium*, *mytilus*, *turritella*, and others still common in the Aral, seem to prove that this sea formerly reached nearly to the present water-parting between the Ob and Aralo-Caspian basins. This is a strong argument in favour of the theory that the Caspian itself was at one time connected by a marine inlet with the Arctic Ocean.

Of the former influents of the Aral, the Sir and Oxus alone now reach its shores. The Sir, or Yaxartes of the ancients, and the Shash, or Sihun of the Arabs, rises in the heart of the Tian-shan. One of its head-streams flows from a lake in the Ala-tau Terskei on the Barskaun Pass; another drains the marshes of the Zanka Pass. But the most copious torrent escapes from the Petrov glacier, whose crystalline mass, some 9 miles long, and scored by five moraines, fills a crevasse of astonishing regularity in the Ak-shiirak Hills. Another glacier of smaller propor-

tions, the Iir-tash, is remarkable for the shape of its basin, the entrance of which is blocked by rocks.

In its upper course the Sir changes its name with every fresh tributary. On leaving the Petrov glacier it is the Yak-tash, then the Taragai to the junction of the Karasai, and after receiving the Karakol it becomes the Great Narin. Below the double confluence of the Ulan and Kurmekti the Narin enters the Kapchegai defile, which no explorer has yet succeeded in penetrating to survey the falls, which must here be very fine, for the river descends, in this space of about 46 miles, altogether from 3,000 to 3,220 feet. United with the Little Narin, the stream flows successively through several of those ancient lacustrine beds which are so common in the Western Tian-shan, and then passes through two other romantic gorges before emerging from the highlands on to the Ferghana plains. South of the town of Namangan it receives the muddy Kara-daria, at whose confluence it at last takes the name of Sir.

Fig. 104.—Lower Part of the Iir-tash Glacier.
Scale 1 : 13,000.



600 Feet.

But no sooner does it acquire majestic proportions than it begins to be impoverished. Notwithstanding the tributaries still flowing to it from the mountains skirting it on the north, its volume is continuously diminished in the Ferghana plain and lower down. In the vast amphitheatre of plateaux and hills enclosing Ferghana its affluents are mostly absorbed in a system of irrigation works, which has converted a large portion of the plain into a blooming garden. The triangular space comprised between the Sir and the Kara-daria is the most fertile tract in all Turkestan. But most of the streams are absorbed in irrigation works before reaching the banks of the Sir. The climate of Ferghana, though severe, is subject to less extremes of heat and cold than the more exposed lowland steppes. Here the prevailing colour is blue. "Everything," says M. de Ujfalvy, "assumes a turquoise hue—sky, rocks, the plumage of raven and blackbird, and even the walls of the buildings."

Above Khojend the Sir escapes from the old Ferghana lake by skirting the Choktal Mountains, thence pursuing a north-westerly course parallel with the Oxus and the Kara-tau range. It seems to flow farther north than formerly, and at one

time probably traversed the Tus-kane morass, which forms a curve of over 120 miles north of the Nura-tau Mountains, and which presents the appearance of a river bed. It seems to have then effected a junction with the Oxus, near the Sheik-jeili eminence, where traces still remain of an old channel. Like the Chu, its lower course at present describes a wide circuit round the basin of an ancient sea, for the Kizil-kum, no less than the Ak-kum and the Kara-kum, is a dried-up sea-bed, formerly united in a single sheet of water with the Aral.

The Chu, which is the main stream of the Terskei Ala-tau and Alexander range, no longer reaches the lower course of the Sir. Although very copious in its upper reaches, it receives no permanent affluents below Karagati, where it branches off into several channels, which gradually run dry in the sands. The Talas also, which escapes from the Tian-shan through the Aûli-ata defile, expands into extensive morasses before reaching the Chu. But below both of these rivers fresh water is found at a depth of from 4 to 6 feet, showing that their streams still filter through underground. West of the Chu the Sari-su, known in its upper course as the Yaman-su, and in its lower as the Yan-su, was also at one time a tributary of the Sir, but is now lost in the steppe sands after a course of over 480 miles. It rises north of Lake Balkhash, on a plateau forming the water-parting between the Ob basin and the region of inland drainage. Several other rivers rising in the same district become exhausted before reaching the Sir or the Aral Sea. Amongst them are a number of Kara-su, or "Black Waters," flowing through peat beds, and noted amongst all the Turkestan streams for their resistance to the action of frost, apparently never freezing in winter.

Throughout its lower course the Sir has frequently shifted its channel even in recent times. Sultan Baber, who flourished early in the sixteenth century, tells us that the Sihun (Sir) at that time ran dry in the sands before reaching any other body of water. At present the Yani, or Jani-daria, branches off from the main stream about 7 miles below Fort Perovsky, and disappears intermittently with the natural changes of the principal current and the irrigation works of the Kirghiz. After ceasing to flow from 1820 to 1848 it resumed its south-westerly course in the latter year, without, however, reaching either the Oxus or the Aral, and at present it is lost in Lake Kukcha-denghiz after a course of some 180 miles. But below this basin there is abundant evidence that it formerly flowed to Lakes Kungrad and Daû-kara in the Oxus delta. On the other hand, the present relief of the land is altogether opposed to the statement of old writers that at one time the Sir even reached the Caspian. At least, it can have done so only through the Yani-daria and the Oxus.

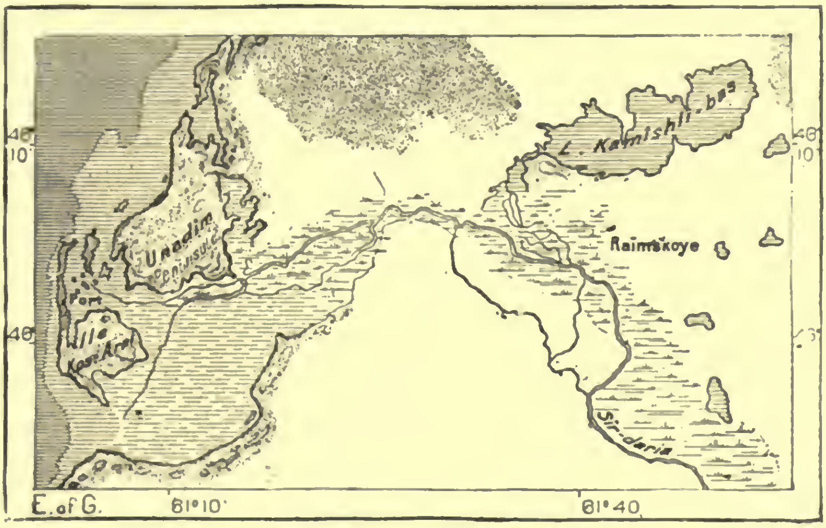
The main channel of the Sir at present ramifies again a little below the Yani-daria outlet into two streams, both of which have changed their course and volume. The southern branch was formerly the more copious, but it has gradually fallen off to such an extent that it is now known as the Jaman-daria, or "Bad River," mostly evaporating in the swamps. The Kara-uzak, or northern branch, at first a mere irrigation canal, now carries the main stream north-west to the north-east end of the Aral. The average amount of water discharged into this sea is at present estimated at no more than one-half of its whole volume above the triple ramification at the head of the delta. Here the discharge at low water seems to be about

31,000 cubic feet per second, and the mean about 90,000 cubic feet. But farther down a vast amount is lost by evaporation in the channels, false rivers, and extensive marshes of the delta. This is the paradise of hunters, abounding in wolves, deer, the wild boar, fox, hare, wild goat, badger, besides the pheasant, heron, ibis, crane, goose, duck, and a species of flamingo. But the tiger seems to have disappeared since the middle of the present century.

The navigation of the Lower Sir is at once uncertain and dangerous. The Russian flotilla is seldom able to cross the bar, which at times has scarcely 3 feet of water. The steamers often run aground on the sand-banks, the stream is blocked by ice for four months in winter, and infested by dense clouds of midges in summer, while the rapid current and the want of fuel increase the obstacles opposed to a regular

Fig. 105.—The Sir Delta.

Scale 1 : 712,000.



0 to 16 Feet. 16 Feet and upwards.

12 Miles.

system of navigation. The attempts hitherto made have been in the interests of war and conquest rather than of trade, and in the actual conditions the waters of the Sir are much more capable of being utilised for irrigation than for any other purpose. By a well-devised system vast tracts might be reclaimed from the desert, and it is certain that the cultivated land was formerly far more extensive than at present. A network of canalisation has already been projected, which, if carried out, will draw off over 2,000 cubic feet per second in order to water about 250,000 acres of waste lands.

The Oxus River System.

he western slope of the Pamir drains entirely to the Amu-daria, or Oxus, whose head-streams thus occupy a space over 180 miles broad between the Hindu-Kush and the Alaï south and north. From this region come all the supplies of the main

stream, which for over one-half of a course estimated altogether at about 1,500 miles does not receive a single tributary.

The chief source of this famous river, known to the Arabs as the Jihûn, still remains to be determined. The relative size of its Pamir head-streams has not yet been ascertained. When Wood visited Lake Victoria (Sari-kul) in 1838, he had no doubt that he had discovered the long-sought source of the Oxus; but it now seems more probable that the chief branch is the Ak-su, or "White River" of the Kirghiz, which rises east of the Great Pamir and of Lake Victoria. This Ak-su may possibly be the Vak-shu of Sanscrit writers, which name may have been changed to Oxsos (Oxus) by the Greeks. If so, this plateau must have been frequented by Kirghiz or other Tûrki nomads long before the time of Alexander, for the name of the river has no meaning except in their language.

Southernmost of the Upper Oxus head-streams is the Sarhad, a river of the Little Pamir, first scientifically explored by the Mirza Suja, in the service of the Indian Government. It rises in the same depression as the Ak-su, but flows in the opposite direction south-westwards to the main stream at Langar-kisht. The Ak-su itself, known in a portion of its course as the Murgh-ab, rises in Lake Gaz-kul, or Oï-kul, which often disappears under the avalanches of snow from the Ak-tash and neighbouring hills. Flowing from this lake, first eastwards, as if to the Tarim basin, the Ak-su soon trends northwards, and after receiving a tributary from Mount Tagharma takes a westerly course, joining the Southern Oxus after it has traversed the Wakhan, Badakshan, Shignan, and Roshan highlands. Farther down the united streams are joined by their last great affluent, the Surgh-ab, flowing from the Trans-Alaï and Karateghin Mountains. Beyond this point the Oxus, escaping from the gorges of the advanced Pamir plateaux, receives no more contributions from the south, and very little on its right bank.

Even the Zarafshan is exhausted before reaching the Oxus. It rises at the foot of the Zarafshan glacier, on the slopes of the Alaï-tagh, which, according to Mishenkov, is 30 miles long. From every snowy cirque of the surrounding mountains the Zarafshan receives numerous torrents, besides a considerable tributary which flows at an elevation of 7,350 feet through the romantic Lake Iskander, so named in memory of Alexander the Great. This fresh-water basin, which is encircled by hills over 3,000 feet high, has a present depth of 200 feet, but the water-marks on the surrounding slopes show that its former level was over 300 feet higher. After entering the Samarkand plain the Zarafshan, whose Persian name means the "Gold Distributor," in reference either to its auriferous sands, or more probably to the fertilising properties of its waters, is divided into countless irrigation rivulets, watering over 1,200,000 acres of arable land. Within 60 miles of the Oxus it is completely exhausted, though the extent to which its natural and artificial channels are flooded varies considerably with the amount of snow and rain, and even with the vicissitudes of peace and war, by which agricultural operations are so largely affected.

South of the Oxus another large river, the Murgh-ab of Merv, also runs dry long before reaching the main stream, of which it was formerly an affluent, but from

LAKE ISKANDER-KÛL

Fig. 106.—Lake Victoria, or Sari-kul.

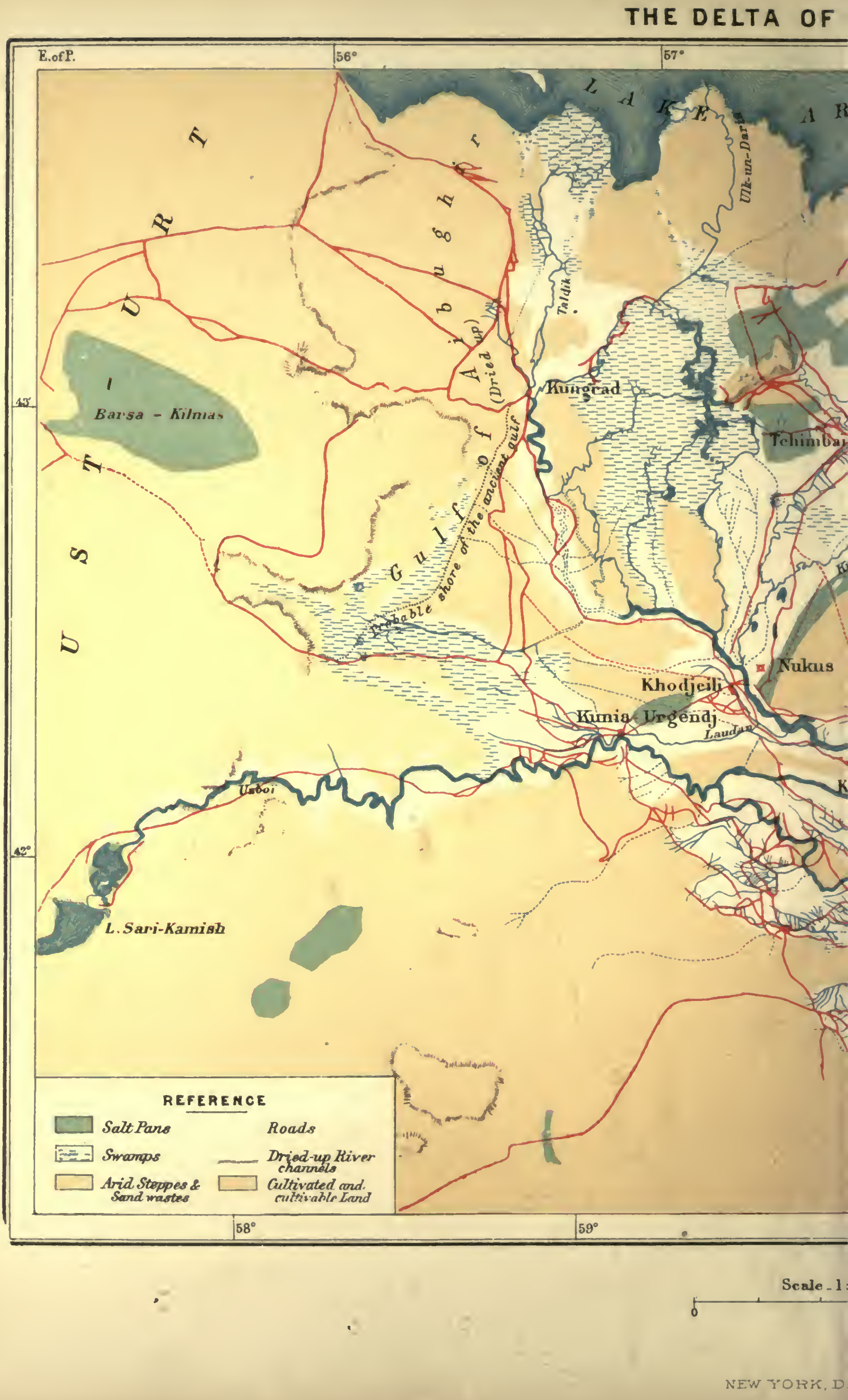
which it is now separated by a desert. Rising in the Garjistan Mountains, Afghanistan, the Murgh-ab receives all the streams from the northern slopes of the Herat highlands, after which it branches off into numerous channels in the plain,

ultimately losing itself in the sands beyond the Merv oasis. To the same basin also belongs the Heri-rûd, or river of Herat, which pierces the border range of the Iranian plateau, but runs dry before reaching the Murgh-ab. The sands blown about by the winds north of the irrigation deltas of these two rivers have so completely effaced the ancient beds that it is no longer possible to tell in which direction they ran. Judging from the general tilt of the land towards the north-west, parallel with the Gulistan and Turkmenian Mountains, they would seem to have flowed not to the present Oxus, but to the western branch, which at one time reached the Caspian. The lines of wells across the desert follow the same direction.

Throughout its lower course below Balkh the Amu follows a normal north-westerly course. At Kilip, where the Russians have commenced its regular embankment, its bed is narrowed to about 1,000 feet by the last advancing spurs of the Hissar Mountains. But in the plains it broadens to an average width of over 2,300 feet, with a depth of 20 feet, and a velocity in the flood of from 5,500 to 11,000 yards per hour. In some places it is considerably over a mile wide even at low water; but here it is studded with low islands overgrown with willows and tall grasses. Its banks, eaten away by the current, are nearly everywhere steep, and before reaching the cultivated districts it even passes a belt of fossiliferous chalk rocks, pierced by a gorge 1,100 feet wide at Toyu-boyin. The current presses generally on the right bank, as is the case with the Volga and Siberian rivers, all being alike affected by the lateral movement produced by the rotation of the earth.

The Amu brings down a considerable quantity of alluvia, causing its waters to be usually of a muddy yellow colour, though not depriving them of their pleasant taste. Like the Nile, it has its regular risings, caused by the melting of the snow, and lasting from May to October. During the cold season it is at times completely ice-bound, and may then be crossed by the caravans proceeding from Merv to Bokhara. Since 1874 regular measurements have been taken of its discharge, which at Pitniak, just below Toyu-boyin, is estimated at 125,000 cubic feet per second. For its total area of drainage, amounting without the Zarafshan and Murgh-ab to about 120,000 square miles, this would represent an annual rainfall of about 12 inches per square mile in excess of the quantity lost by evaporation, an excess mainly due to the abundant snows of the Pamir. The actual discharge is exceeded in Europe only by the Volga and Danube, and while only one-half that of the Shat-el-Arab (Euphrates and Tigris), it nearly equals that of the Nile. During exceptional floods, such as that of 1878, it even surpasses the mean of the Mississippi.

At Nukus, where it ramifies into several branches to reach the Aral, it has already lost half the volume discharged at Toyu-boyin, a loss due mainly to the amount diverted from its left bank to water the oasis of Khiva. During the irrigating season, from the middle of April to the end of July, the cultivated lands of Kharezm, estimated at about 4,250 square miles, absorb some 250 billion cubic feet of water, or one-seventh of the entire annual discharge, while the sedimentary deposits are estimated at 16,660,000 tons, a quantity sufficient to raise the level of


THE DELTA OF
E. of P.
56°
57°
58°
59°
43°
42°
LAKE AR
Ulk-un-Darie
USTURT
Aibughir
(Dried up)
Gulf of
Probable shore of the ancient gulf
Taldik
Kungrad
Tchimbai
Barsa - Kilmas
Nukus
Khodjeili
Kunia Urgendj
Laudan
Usboi
L. Sari-Kamish
REFERENCE
Salt Pans
Swamps
Arid Steppes & Sand wastes
Roads
Dried-up River channels
Cultivated and cultivable Land
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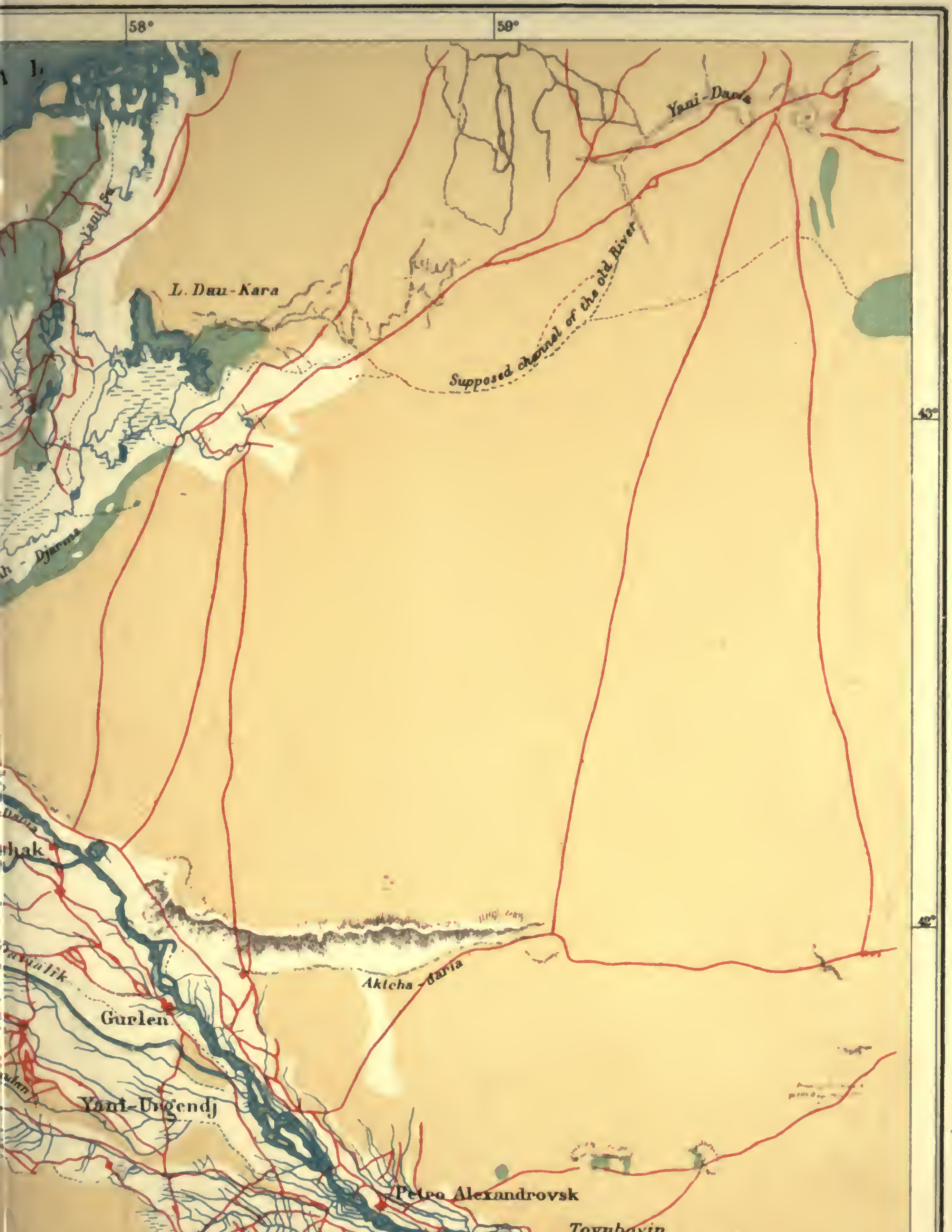
HE AMU DARIA.



0.000.

50 Miles.

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the land eight-tenths of a millimètre every year. But while the alluvia thus deposited in the artificial canals are annually cleared out, never obstructing the free circulation in the irrigating rills, the natural beds winding towards the Aral become yearly more and more choked up. Here are formed sand-banks and shifting bars dangerous to navigation, and imparting to the stream a natural tendency to overflow into the irrigating works.

Geologically speaking, the Oxus delta consists properly of the alluvial plain yearly fertilised by its waters. The triangular space comprised between the Aral and the two exterior branches, Taldik on the west and Yani-su on the east, is a delta only in appearance, for this tract does not consist of alluvial deposits at all. They are older formations, through which the stream has cut various fortuitous channels, and in which the mean slope is much greater than in the true alluvial plains. From Nukus to the mouths, a distance of over 70 miles in a straight line, the total fall exceeds 60 feet, whereas from New Orleans to the Gulf of Mexico, a much greater distance, it amounts to no more than a few inches at low water. True deltas are formed only at the mouths of the several branches in the Aral, where the bars already exclude vessels drawing over 4 feet of water, while farther up the dense growth of reeds, from 20 to 25 feet high, stops all craft except the skiffs of the Khiva fishermen. Nevertheless the steamer Perovsky, drawing rather more than 40 inches, succeeded in 1875 in forcing its way by the Yani-su, Lake Daû-kara, and the Kuvan-jerma, or "New Cut," up to Nukus, to the great astonishment of the natives. Since then the navigation of the Lower Oxus has never been interrupted, notwithstanding the obstacles at the entrance and the swift current, which the steamers often find great difficulty in surmounting. Formerly the Taldik, or western branch, was the deepest; but like the Darialik, lying still farther westwards, it has been gradually choked up by the natural tendency of the river to be deflected more and more towards the east.

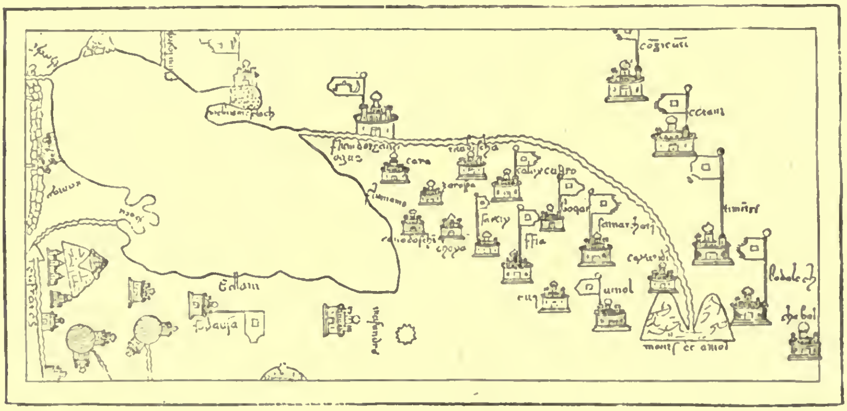
The great changes that have taken place in the course of the Oxus within the historic period are amongst the most remarkable physiographic phenomena, comparable in recent times only to the periodical displacements of the Hoang-ho. That the region of the Lower Oxus is not a true delta, and that the river has not yet cut regular channels through it, is explained by the fact that the Amu has flowed in this direction only during a recent epoch, or probably for not over three hundred and fifty years. During the first half of the sixteenth century it was, in fact, an affluent of the Caspian. But even that was but a temporary phenomenon, the Oxus having oscillated twice between the Caspian and the Aral since the time of the Greek historians.

In the days of Strabo the Oxus, "largest of all Asiatic rivers except those of India," flowed to the Caspian, and the trade between the Euxine and India followed this river, continuing the valley of the Kur eastwards of the Hyrcanian Sea. But in the time of the first Arab and Turkish writers the Oxus, described by Edrisi as "superior in volume, depth, and breadth, to all the rivers of the world," had been diverted northwards to the Aral. In the fourteenth century it had again resumed its course to the Caspian, towards which there is a relatively steep incline, for the bifurcation of the present and the old bed below Yani-urgenj is 140 feet above the

level of the Aral, and 380 feet above that of the Caspian. The new channel was blocked for about two hundred years; but towards the middle of the sixteenth century the Amu, for the second time during the historic epoch, shifted its course from the Caspian to the Aral.

Few geographical questions have given rise to more discussion than these periodical displacements of the Oxus. Some have even denied that it reached the Caspian in the time of the Greeks, attributing the old bed to prehistoric times. The dunes and clay eminences here and there obstructing the channel have been appealed to in proof that the Caspian branch has been dried up for ages, notwithstanding the unanimous testimony of the natives to the contrary. The difference in the faunas of the two seas, which have in common only one species of salmon, have also been referred to in support of the same view. Nevertheless the historic evidence on the subject is complete, and the documents quoted by Rawlinson, Yule, and others place it beyond doubt that the Western peoples were perfectly acquainted

Fig. 107.—Map in the Catalonian Atlas of 1375.
Reduced Scale.

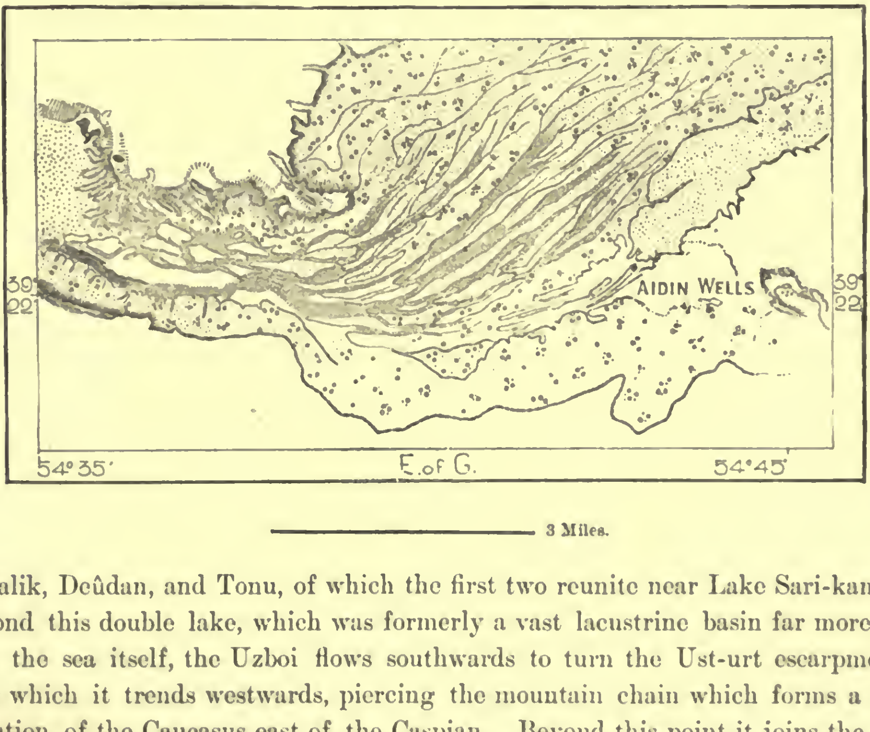


with the "river of Urgenj"—that is, the Oxus—as a tributary of the "Sea of Baku"—that is, the Caspian. A map in the Catalonian atlas of 1375 even shows the Sir and Amu as united in one stream, and this is in accordance with contemporary statements. At the same time it is impossible to fix the precise date of the return of the Oxus to the Aral. In 1559, when Jenkinson visited Turkestan, it had already ceased to flow to the Caspian, but it still watered the fields west of Kunia-urgenj, and the traveller himself was able to embark at this city. A little later on Abul-Ghazi, Khan of Urgenj in the beginning of the sixteenth century, tells us that about 1575 the river, being deflected constantly eastwards, at last abandoned the Urgenj oasis and discharged all its waters into the Aral.

The old Caspian branch, which has an average width of 1,100 yards, has now been thoroughly surveyed, and is as well known as if it were still flooded. Its steep argillaceous banks are cut by the stream to a depth of from 60 to 70 feet; the sand-banks rising to the surface and the islands in the midst of the river may still be recognised, while the deeper depressions are often filled with long lakes

following the windings of the stream. But the water has mostly become salt, and the banks are covered with crystalline deposits. A few fresh-water pools even remain, often surrounded with poplar and wild olive thickets. The Uzboi, as this branch is called, was at one time supposed to have a second mouth south of the island of Cheleken, in the so-called Khiva Bay. But Stebnitzky failed to discover any traces of this branch, though another, forming the true delta of the Old Amu, certainly flowed south of the Darja peninsula. The Turkomans still show the traces of the irrigating rills diverted from the Lower Oxus, which did not end its course in the plain, but made its way through a defile flanked north and south by the Great and Little Balkan respectively. The different sections of this abandoned branch were formerly known by various names—Laûdan, Darialik, Kunia-daria, Uzboi, Engiûnj, Deûdan; but it is now generally named the Uzboi from the Khiva country to the Balkan Gulf. It begins east of the Amu delta with three channels, the

Fig. 108.—Valley of the Uzboi at the Aïdin Wells.
Scale 1 : 146,240.



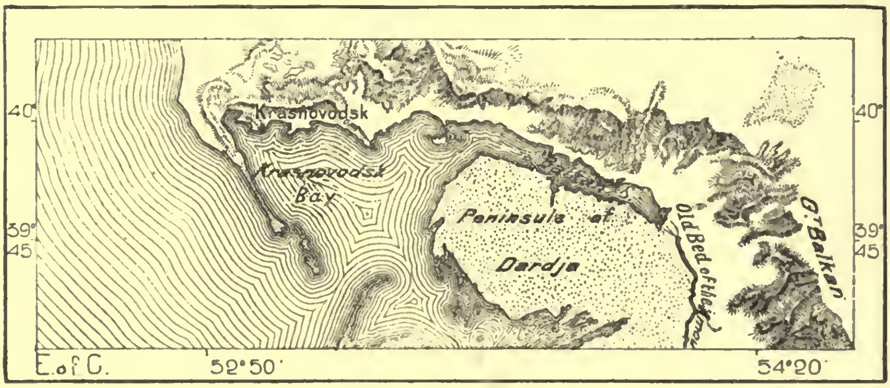
3 Miles.

Darialik, Deûdan, and Tonu, of which the first two reunite near Lake Sari-kamish. Beyond this double lake, which was formerly a vast lacustrine basin far more salt than the sea itself, the Uzboi flows southwards to turn the Ust-urt escarpments, after which it trends westwards, piercing the mountain chain which forms a continuation of the Caucasus east of the Caspian. Beyond this point it joins the Aktam "wady," and falls into the fiord-like Gulf of Balkan in the South Caspian, after a total course of about 480 miles. The ruins of towns and villages on its upper course between the Amu delta and Sari-kamish belong evidently to two epochs answering to the two periods during which it flowed to the Caspian. The older towns imply a far higher degree of culture and wealth than the more recent, which differ in no respect from those of the modern khanate of Khiva. According to the natives another channel branched off near Charjui far above the present delta, and flowed due west across the now desert Kara-kum steppes.

The Aral Sea.

The Balkan Gulf penetrates far inland, and the sandy tracts, saline depressions, and extensive morasses found along the course of the Uzboi give it rather the appearance of an old marine strait or chain of lakes than of a simple river bed. At some remote geological epoch, and before serving to carry off the waters of the Oxus, the Uzboi probably received those of the Aral Sea, which at that time stood at a higher level than at present, and may have thus communicated directly with the Caspian. When this region was well wooded, as is expressly stated by Strabo and repeated by the Arab writers of the tenth century, the Aral basin no doubt stretched south-westwards to the Ust-urt plateau. Its level was naturally subject to considerable vicissitudes from century to century, not only according to the greater or less rainfall, but also in consequence of the changes in the course of the Oxus. Hence, while some features point at a higher, others imply a lower level

Fig. 109.—The Balkan Gulf.
Scale 1 : 1,750,000.



30 Miles.

than at present. It no doubt takes the title of "sea," which it in some respects deserves, if not for its depth, at least for its extent. Still it depends for its very existence on its two great feeders, the Oxus and the Sir, and should these shift their course again to the Caspian, it would disappear in a few years. But the Oxus has certainly failed to reach it twice in historic times, while one branch of the Sir has also flowed through the Oxus to the Caspian. Consequently there can be no reasonable doubt that the Aral has at various times been reduced to the proportions of a small steppe lake. In 1870 Stebnitzky estimated its area, exclusive of its four chief islands, at 26,300 square miles. Its deepest part, washing the eastern cliffs of the Ust-urt plateau, is nowhere more than 225 feet; in the centre it falls to 170 feet; but elsewhere, and especially on its southern and eastern shores, it is little more than a flooded morass, shifting its limits with the direction of the winds. Taking the mean depth at 40 or even 50 feet, its volume cannot exceed

SHORES OF THE CASPIAN.

1,233,434,000,000 cubic yards, or only 11 times that of Lake Geneva, which is nevertheless 116 times smaller in extent.

The mean discharge of the Oxus amounting to 35,000, and of the Sir to 42,000 cubic feet per second, the quantity contributed by both of these feeders, independently of smaller affluents, which are dry for most of the year, is consequently about 77,000 cubic feet per second. But this is precisely the quantity which would be lost by a yearly evaporation of 1,020 millimètres. The actual evaporation is estimated by Schmidt and Dohrandt at 1,150 millimètres, so that even after

Fig. 110.—Inundation of the Oxus in 1878.
Scale 1 : 2,500,000.

allowing for the slight rainfall on the basin the evaporation must be in excess of the inflow. Hence the lake is diminishing in size, and the Gulf of Aibughir, west of the Oxus delta, which had nearly 4 feet of water in 1848, had been reduced in 1870 to a mere swamp, completely separated from the Aral by an isthmus of mud and reeds, and in 1872 it had disappeared altogether. It is now partly wooded, and occasionally flooded from the Oxus. The basin has thus in a few years been reduced in size by about 1,400 square miles. A vast extent of sands on the northern shores forms part of the lake on Gladishev and Muravin's map prepared in 1740, and on the slopes of the western cliffs the old water-marks are visible

140 and even 250 feet above the present level. On the east side the Kirghiz show a mosque originally built at the water's edge, but now standing many miles from the lake. The sands are thus incessantly encroaching on the waters, and the progress of the dunes along their shores may be followed with the eye. Numerous

Fig. 111.—The Aral Sea.
Scale 1 : 4,000,000.

islands, formerly mere shoals and banks, now contribute to justify the Tûrki name of the Lake Aral-denghiz, or "Sea of Islands."

But far more rapid must have been the change when the Oxus shifted its channel to the Caspian. Were such an event to recur, the lake would lose one-twentieth of its volume in the very first year, and in a quarter of a century the

water would have everywhere disappeared except from five depressions reduced to the proportions of the other steppe lakes. The Greek and Roman writers, who describe the Oxus as an affluent of the Caspian, make no mention at all of the Aral, which they could not have possibly overlooked, had it at that time occupied anything like so large an area as at present. But at the time of the Arab conquest, when the Oxus had again abandoned the Caspian, the Aral is known to contemporary writers, one of whom, Khorezmi, a native of the country, gives it a circumference of about 100 leagues. This is about one-third of its actual periphery, which, apart from the smaller indentations, may be estimated at 800 miles. But with the return of

Fig. 112.—Old River Beds of the Aralo Caspian Basin.
Scale 1 : 13,900,000.

Old Watercourses.

240 Miles.

the Oxus to the Caspian the Aral again drops out of sight. Even Marco Polo, who crossed from the Volga to the Oxus steppes, makes no allusion to its existence. Hence we may conclude that with the shifting of its affluents the Aral oscillated between the conditions of a sea and a steppe swamp.

The quantity of salt contained in its waters also depends upon its volume. At present it is so slightly brackish that wild and domestic animals freely drink it, and 11 in 1,000 may be taken as the mean proportion of all the salts held in solution, which is about one-third less than in the Caspian, while it contains nearly three times the quantity of gypsum. Hence the composition of its waters shows clearly that the Aral is not a remnant of an oceanic basin. In its fauna,

which has only recently been carefully studied, both fresh and salt water species are represented. The former, however, prevail, although not including the sturgeon and sterlet of the Caspian. Falk, Pallas, and others have spoken of seals, which would have a more intimate connection with the Arctic Ocean and the Caspian. But Maksheyev has shown that this animal is unknown in the Aral, which has altogether only one-third of all the species found in the Caspian. On the other hand, the *scaphirhynchus*, a species of fish supposed to have been exclusively American, has been found both in the Sir and the Oxus.

The shallows, sudden storms, and scanty population of its shores prevent the navigation of the Aral from acquiring any great expansion. Hitherto it has been utilised mainly for military purposes; but a project has been spoken of which would connect this basin with the inland navigation of Europe by restoring the old course of the Uzboi as far as the Gulf of Balkan. This project, already entertained by Peter the Great, has even been partly commenced, and a portion of the Oxus has

Fig. 113.—Ak-tau and Mortviy-kultuk.

Scale 1 : 4,000,000.

again been directed towards the Caspian. During the great floods of 1878 the Uzboi received a discharge of 31,500 cubic feet per second, most of which was lost in the surrounding swamps, a current of 13 feet alone reaching the Sari-kamish lakes. In 1879 the supply from the canal constructed to the Uzboi scarcely exceeded 2,100 cubic feet per second, but by means of side dykes the new river was diverted to the Sari-kamish basins. Nevertheless, these basins being nearly 50 feet below the level of the Caspian, it would be necessary to flood a space of about 400 square miles before their waters would be raised high enough to flow to the Caspian. They might doubtless be avoided by means of an artificial canal. But unless the bars of the Amu are removed, and the course of this river and of the Sir regulated by embankments, the advantage of restoring the Uzboi is not apparent. In a region where the few oases are exposed to the advancing sands every drop of water should be employed for irrigation purposes.

The Turkoman Deserts and Highlands.

The Kara-kum, or "Black Sands," a vast triangular space stretching south of the Aral between the Amu, the Uzboi, the Tekke Turkoman hills, and the Merv oasis, might again be changed by the fertilising waters to a productive land. These solitudes, strewn with the ruins of many populous cities, are now scarcely traversed by a few difficult tracks lined at long intervals with wells, which are often found

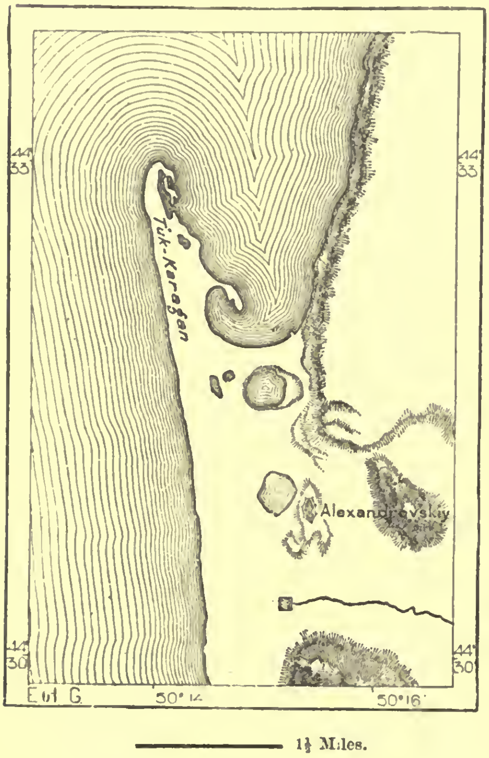
Fig. 114.—Entrance to the Kara-boghaz.
Scale 1 : 91,000.

empty or too brackish to be potable. Here "every drop of water is a drop of life." Shifting sands, carefully avoided by the caravans, sweep in a succession of dunes over vast distances. Elsewhere the argillaceous soil, hard and crevassed, re-echoes under the horse's hoof, or saline quagmires beguile by their mirages the unwary traveller to their treacherous beds. The land is mostly bare, producing little beyond a few tufts of thistles or dwarfish thorny plants. The saksaûl thickets are now rare in the desert south of the Oxus, having been mostly destroyed during the last

century. But some of the slopes skirting the wilderness on the south-west are almost verdant, thanks to the slight rainfall and the few springs rising at the foot of these heights. A zone of cultivated lands thus separates the desert from the Iranian highlands. These are the so-called Atok, the home of the Tekke Turkomans—the Akhal-atok in the west, the Deregez-atok in the centre, and the Kelat-atok in the east.

The Great Balkan, north of the old mouth of the Oxus in the Caspian, is the chief summit in those uplands, which might be called the "Turkoman Caucasus," forming as they do a continuation of the Great Caucasus east of the Caspian. North of the Great Balkan and of its western extension to the peninsula enclosing the entrance of the Krasnovodsk Bay, there stretches a hilly region, which blends in the so-called "Trans-Caspian territory" with the Ust-urt plateau. Southwards the less imposing Little Balkan, clothed with a few patches of scant vegetation, forms the extremity of the frontier chain of the Iranian plateau, which runs with remarkable uniformity in a south-easterly direction, and which is known to the Turkomans on the north, and the Persians on the south, by different names. Nearest to the Little Balkan is the Kuran-dagh, followed successively by the Kopet (Kopepet-dagh), or Daman-i-koh, and the Gulistan Mountains, highest of the range, and interrupted eastwards by the Heri-rûd and Murgh-ab valleys.

Fig. 115.—The Tuk-karagan Lakes.
Scale 1 : 500,000.



The Atrek and Gurgan Rivers.

Although the Kuran and Kopet-dagh may be regarded as the outer rim of the southern uplands, there nevertheless intervenes between them and the plateau proper a broad valley watered by the river Atrek. Here, also, as in the Tian-shan system, the crests cross each other, one running north-west and south-east, the other taking nearly the line of the meridian, and in the angle formed by these two ridges is developed an irregular and hilly plain sloping towards the Caspian. Although over 300 miles long, the Atrek, even near its mouth, is usually but a feeble stream some 30 feet broad. It has been almost completely exhausted by irrigation works and evaporation before reaching the Caspian. But during the spring floods

its waters expand to a width of from 6,500 to over 8,000 feet. Farther south flows a smaller stream, which, however, never runs dry, and which abundantly waters the Astrabad plains about the south-east corner of the Caspian. This is the Gurgan (Jorjan, Hurgan, Vehkran), or "Wolf River," which abounds in fish, and which, although less than 120 miles long, has acquired great historical importance, and has given its name to the whole region vaguely known to the ancients as Hyrcania. At one time the lower course of this river, at another that of the Atrek, is taken as the natural frontier of Persia, and it was by ascending their valleys that the Russians have been able to turn the Turkoman positions in their natural strongholds of the Daman-i-koh.

Formerly the passage of the Gurgan was defended by the Kizil-alan, or "Red Wall," intended to protect the agricultural populations of Persia against the Turkoman nomads, the accursed Yajug and Majug ("Gog and Magog"), as they were called by the mediæval Arab writers. Like most of the ruined structures of

Fig. 116.—Tentiak-sor.
Scale 1 : 770,000.

120 Miles.

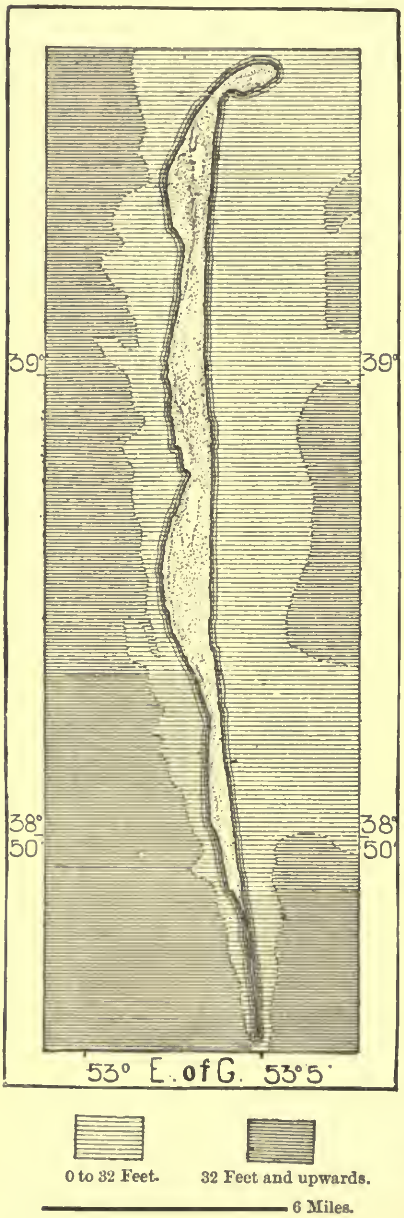
Central Asia, this wall was attributed to Alexander the Great, who, according to the legend, erected it in a few days with the aid of an army of genii. But it seems rather to have been the work of Khosroës Anurshivan, and when it was built the level of the Caspian appears to have been lower than at present, for its western section advances some miles into the sea. Its ruins may be traced to the sources of the Gurgan, and even to Bujnurd, in the Upper Atrek valley, so that it must have been over 310 miles long altogether. Little now remains of it except a line of mounds 4 to 6 feet high and 30 feet broad, commanded at intervals of 1,000 paces by ruined towers.

The Ust-urt Plateau.

Between the Aral and the Caspian a plateau of limited extent stands like a rocky island between the marine waters and the low steppes formerly flooded by the great inland sea of Turkestan. This is the Ust-urt, or "High Plain," so

named in contradistinction to the Ast-urt, or "Low Plain," of the Kirghiz. It is a typical tableland in its isolation and steep escarpments. The inequalities of the surface are due chiefly to the snows and rains, which have worn the upper strata and excavated countless little cavities with no outlets either to the Aral or the Caspian. Nearly everywhere the Ust-urt is limited by a *chink*, or cliff, which would render it inaccessible but for the ravines by which it is pierced at intervals. From its base spring a number of fresh-water streams with a slight taste of sulphur. West of the Aral Sea the chink forms a continuous wall, in some places over 330 feet high, and certain mysterious structures in the form of truncated pyramids occur here and there along the edge of the cliffs. The plateau consists entirely of tertiary rocks, thus contrasting sharply with the plains stretching east of the Aral. Its chief eminences attain an altitude of 660 feet above the lake, consequently over 830 feet above the Mediterranean, besides which the Ak-tau, or "White Mountain," forms a small rocky chain running south-east and north-west beyond the plateau far into the Caspian, where it forms the Mangishlak peninsula. Most of the parts hitherto visited by Russian explorers have been found destitute of vegetation. But there are numerous pastures in the flats, and the southern portion of the plateau deserves rather the title of "Plain of the Gazelle," or of the "Wild Horse," or of the "Wild Ass," than that of Kaflankir, or "Plain of the Tiger," conferred on it by the Turkomans. This region is even occupied by a Kirghiz population, who, however, are obliged constantly to shift their quarters. The shortest road from the Caspian to the Oxus delta runs from the eastern extremity of the Mortviy-kultuk Bay north-east across the Ust-urt to Kungrad, a distance in a straight line of 250 miles. It was utilised by the Russian traders for the first time in 1878, and was found to present no obstacles to caravans. It is lined at intervals by twelve wells, sufficient for two hundred camels. A railway has

Fig. 117.—Ogurchinskiy Island.
Scale 1 : 300,000.



recently been projected to connect the Caspian and Aral by the line of lakes and saline marshes, which probably represent a strait, at one time running between the Mortviy-kultuk Bay on the Caspian, and the Chernichev inlet on the Aral.

East Coast of the Caspian.

Some of the basins on the east side of the Caspian, penetrating far into the steppe, may be regarded as distinct lakes, forming the transition between that sea and the saline waters scattered over the Turkestan desert. One of these is the Kara-boghaz, or "Black Abyss," which is nearly isolated from the Caspian, forming an oval expanse some 6,400 square miles in extent. Limited westwards by a slight sand embankment, it communicates with the sea only through a channel from 650 to 2,650 feet broad, and scarcely 4 feet deep at its entrance. A current from the Caspian sets steadily across the strait at the rate of from 3 to 4 miles an hour. This dangerous channel is carefully avoided even by explorers, and Jerebtzov was the first to penetrate through it to survey the shores of the inner basin. The cause of the rapid current has been explained by Baer. The Kara-boghaz has only a mean depth of from 12 to 40 feet, and is everywhere exposed to the winds and summer heats, so that here the evaporation is excessive, necessitating a constant inflow to repair the loss.

Fig. 118.—Kuiali Island.
Scale 1 : 270,000.

But while evaporating the moisture, the inland basin retains the salt from the Caspian, and thus becomes constantly more saline. It is said to be already uninhabitable, and the fish carried through from the Caspian become blind in five days. Saline incrustations are beginning to be deposited on the bottom, and the basin is fast becoming

a vast salt-pan, drawing from the Caspian a daily supply estimated by Baer at 350,000 tons of salt, or about as much as is consumed in the whole Russian Empire in six months.

The other basins on the east coast, and especially about the Mangishlak peninsula and the Tuk-karagan headland, offer every degree of salinity according to the amount of evaporation and of salt water received from the Caspian. Some, like the Ashchai-sai, between the Kara-boghaz and the Mangishlak peninsula, having already ceased to communicate with that sea, have dried up, and their basins are now filled with salt, in some instances covered by sand.

The Kara-boghaz is connected by a chain of swamps, saline depressions, and lakelets with the Mortviy-kultuk, another saline reservoir, which is gradually being cut off from the north-west gulf of the Caspian. It is already little more than a steppe lake, with a mean depth of less than 7 feet; it is being constantly invaded by the sands of the desert, raising its level, and rapidly changing it to a vast salt marsh. But before it becomes completely detached from the Caspian, the Kaidak, or Kara-su ("Black Water") channel, stretching south-westwards towards the Kara-boghaz, will itself have been changed to a salt lake. It fills a long and deep fissure commanded by the steep cliffs, which form a continuation of the Ust-urt chink. In the sixteenth century, when the steppe tribes were still independent of Russia, the great international fair was held on the shores of the Kara-su. At that time the bar separating this fiord from the Mortviy-kultuk could be easily crossed, but it is now almost inaccessible, and in 1843 the Russians were obliged to abandon the fortress of Novo-Alexandrovsk, which they had erected in 1826 on the east side of the Kara-su. The Mortviy-kultuk is already twice as salt as the Caspian, while the salinity of the Kara-su even exceeds that of the Gulf of Suez, the most intensely salt of all basins communicating directly with the ocean.

The whole region stretching north-east of the Caspian, and connected by a chain of swamps with the Aral basin, presents the same evidences of transition from the sea to steppe lakes. Here are nothing but low-lying, marshy, and reedy tracts, which again become flooded after the prevalence for a few days of the fierce west winds. Until the year 1879 the Russian officials were in the habit of avoiding the swampy and saline region of the Tentiak-sor by skirting its northern limits, and the Astrakhan and Guryev fishermen had taken advantage of this negligence to cure their fish without paying the regular tax.

Notwithstanding the vast alluvial deposits brought down by the Volga and other rivers from the west, this side of the Caspian is still much deeper than the opposite. Off the Turkoman coast, between Krasnovodsk and Chikishlar, depths of 28 fathoms do not occur within distances of from 30 to 45 miles of the shore, whereas on the European side 330 fathoms are reached at corresponding distances from the coast. A submerged shore stretches from the Krasnovodsk peninsula to the coast of Mazenderan, and the long island of Ogurchinskiy, or the "Cucumber," as the Russians call it, is evidently a remnant of that shore. North of the Mangishlak peninsula the island of Kulali forms a similar sandy dune of the characteristic crescent shape so common to shifting sands. The Caspian has

evidently been subject to frequent changes of level since its separation from the Euxine. While the *bugri* of the Volga delta show that at one time the waters subsided rapidly, the contours of the Cucumber and Kulali Islands, moulded by the regular action of the waves, are, on the other hand, a proof of a period of upheaval. The direct observations taken between 1830 and 1863, compared with the marks scored by Lenz in a rock near Baku, show a subsidence of 46 inches. The two trigonometrical surveys of the Caucasus made in 1830 and 1860 show almost identical results, so that in 1860 the Caspian must have been more than 86 feet below the level of the Euxine.

VI.—INHABITANTS OF THE ARALO-CASPIAN REGIONS.

ALTHOUGH commonly known as Turkestan or Tatary, this part of the Asiatic continent is not exclusively occupied by peoples of Tûrki stock, and it is even probable that the original population was Aryan. But however this be, these boundless steppe lands are ethnically a region of contrasts. The opposition presented by the wonderful gardens watered by the Amu and the Sir to the frightful wildernesses of the "Red" and "Black Sands" reappears in the inhabitants themselves, some occupied with agriculture and industry, other nomad pastors sweeping the desert and ever preying on the wealth amassed by their sedentary neighbours in the fertile oases. Commercial relations are established from town to town, but between townsfolk and nomads incessant warfare was formerly the normal and natural state. The desert encroaches on the oasis, and the wandering shepherd threatens the tiller of the soil. Such was the struggle carried on from the remotest antiquity, interrupted only by foreign conquest, which for a time associated the Aralo-Caspian basin with other regions, but which also swept away all local civilisation by wholesale slaughter. Nowhere else have the conflicting elements been more evenly balanced; nowhere else has even religion assumed such a decided dualistic character. It was in the land of the Baktrians—a paradise of verdure encompassed by a wilderness of sands—that was developed the Iranian Mazdeism, the worship of the twin and irreconcilable principles of good and evil engaged in a ceaseless struggle for the ascendancy. Ormuzd and Ahriman have each their hosts of spirits who do battle in the heavens, while mankind takes part in the everlasting conflict on earth.

At the same time the division into a nomad and a settled element is far more an ethical and traditional than an ethnical distinction. Iran and Turan are symbolic expressions rather than terms answering to an outward reality. Amongst the sedentary and cultured races of the Aralo-Caspian regions the Tûrki and even the Mongol elements are strongly represented, while the Aryans, descendants of Parthian and Persian, also form a certain section of the wandering population in the Oxus basin. According to the political vicissitudes, corresponding largely with those of the local climate, the cultured agricultural nations and the pastoral steppe tribes each prevailed in their turn, while now one, now another of the contending

elements was favoured by the foreign conquerors—Iranians, Macedonians, Arabs, Mongols, Russians. Thanks to the Slav preponderance, the Aryans are now once more in the ascendancy, but there is room for all in a land whose resources, if properly utilised, would largely suffice for Iranian and Turanian alike. The actual population of the whole region, about which the greatest uncertainty still prevails, is roughly estimated at about 7,000,000, or less than 4 to the square mile. Still more uncertain are the attempts at classification according to speech and origin. All that can be positively asserted is that the "Turanian" element is the strongest, forming probably over two-thirds of the entire population.

The Turkomans.

Of the Turanians the chief branches are the Kirghiz and the Turkomans, or Turkmenians, the latter of whom roam over the south-western parts from the Ust-urt plateau to Balkh, a vast domain of altogether about 200,000 square miles. Estimated at nearly 1,000,000, they are divided into numerous tribes and sub-tribes, grouped in hordes, each of which again comprises a number of clans or families. These are again often further modified by conquest and migrations, but the main divisions are maintained, and from political causes often acquire a distinctive character. Since the fall of Geok-tepe and the submission of the Akhal Tekkes in 1881, the whole of the Turkoman race may be regarded as either directly or indirectly subject to Russian control. About 200,000 are nominal subjects of the Khan of Khiva, and these are gradually blending with the sedentary Sartes and the Uzbegs. Most of the Yomuds are no doubt tributaries of Persia, but for eight months in the year they camp north of the Atrek, and are then obliged to select a Khan responsible to the Russian Government. The Ersari recognise the authority of the Emir of Bokhara, himself dependent on the Muscovites, and the El-Eli owe an enforced allegiance to the ephemeral rulers of Afghan Turkestan. The Tekkes and Sariks of Merv still maintain their political independence, but the Salors, originally also of Merv, and claiming to be the noblest of the race, are now subject to the Tekkes. The classification of all these tribes is beset with difficulties, and the greatest discrepancies prevail in the different estimates of travellers and explorers. According to Petrusevich the chief divisions are as under:—

Tekkes of Merv	50,000	Kibitkas, or	250,000	souls.
Tekkes of the Atok	30,000	"	150,000	"
Ersari	40,000	"	200,000	"
Yomuds	20,000	"	100,000	"
Sariks	20,000	"	100,000	"
Goklans	9,000	"	45,000	"
Chudors	6.000	"	30,000	"
El-Eli	3,000	"	15,000	"
Salors	3,000	"	15,000	"

Most of the Turkomans, especially those on the skirts of the desert between the Atrek and Oxus, have preserved the characteristic traits of the race—broad brow, small and piercing oblique eyes, small nose, rather thick lips, ears projecting from the head, black and scant beard, short thick hair. In the Atrek valley and the

highlands skirting the Iranian plateau there is a large mixture of Persian blood, due to the women carried off in their constant raids on the frontier. But while thus partly losing his Tatar expression, the Atrek Turkoman still retains his piercing glance, proud and martial bearing, by which he is distinguished from the Kirghiz, Uzbegs, Kara-Kalpaks, and other branches of the race. They are mostly

Fig. 119.—Turkoman Female Head-dress.

also of tall stature, very vigorous and active. Except in Merv and a few other places, all dwell in the *kibitka*, or felt tent, and the strength of the tribe is estimated according to the number of these tents, which are reckoned to contain about five souls each. Their whole furniture is restricted to a few rugs and couches. The national dress consists for both sexes of a long silk smock reaching from the shoulders to the ankles, to which the men add the *chapan*, or *khalat*, somewhat like a European

dressing-gown, and as head-dress a light fur cap. The women usually wear nothing but the long smock, adding on special occasions a large shawl, girdle, red or yellow boots, bracelets, necklaces, and earrings. They will sometimes even pass rings through the cartilage of the nostrils, and commonly attach to the breast little caskets of amulets resembling cartouch boxes, and which accompany their movements with a metallic clink. Coins, coloured gems, true or false, gold and silver ornaments, deck their head-dress, which occasionally assumes such proportions that the face seems to be enframed like a holy image in its shrine. They do not veil their features, like other Mohammedan women, for, as they say, "how can we, poor steppe people, conform to town usages?"

The Turkomans of the Daman-i-koh oasis recognise no chiefs. "We are a people without a head," they say haughtily; "we are all equal, and each of us is a king! We can endure neither the shade of a tree nor the shadow of a chief." Some members of the tribe no doubt take the title of *ak-sakal*, or "White Beard," *bay*, *bii* (Bey), or even Khan. But this is mere make-belief, and no one dreams of showing them any more deference than to other warriors, unless specially distinguished for courage or other virtues, or unless they have secured a following by the sale of corn on credit. Those known as the "Good"—that is, the wealthy, the men of experience, the bravest in the field—enjoy great influence in the council, when weighty matters are under discussion. But they have no judicial authority, and nobody ever appeals to any one in case of theft, injury, or other wrongs. He avenges himself as best he can, and feuds are thus handed down from generation to generation, unless the original offence is repaired by a monetary compensation. The steppe life is mainly regulated by the *deb*, or unwritten code, which requires all to respect their peaceful neighbours, to practise hospitality, and to keep their pledged word. The Turkomans are distinguished from the surrounding peoples—Persians, Afghans, Bokhariots—by greater uprightness and less corrupt morals. In war alone they give full bent to their innate ferocity, while in the ordinary relations of life distinguishing themselves for their strict honesty. Amongst them it is the debtor, not the creditor, who keeps the receipts for borrowed money, in order not to forget the extent of his obligations. The document is no concern of the creditor, though it may be feared that the "civilisation" introduced by the Russians will tend to modify these customs.

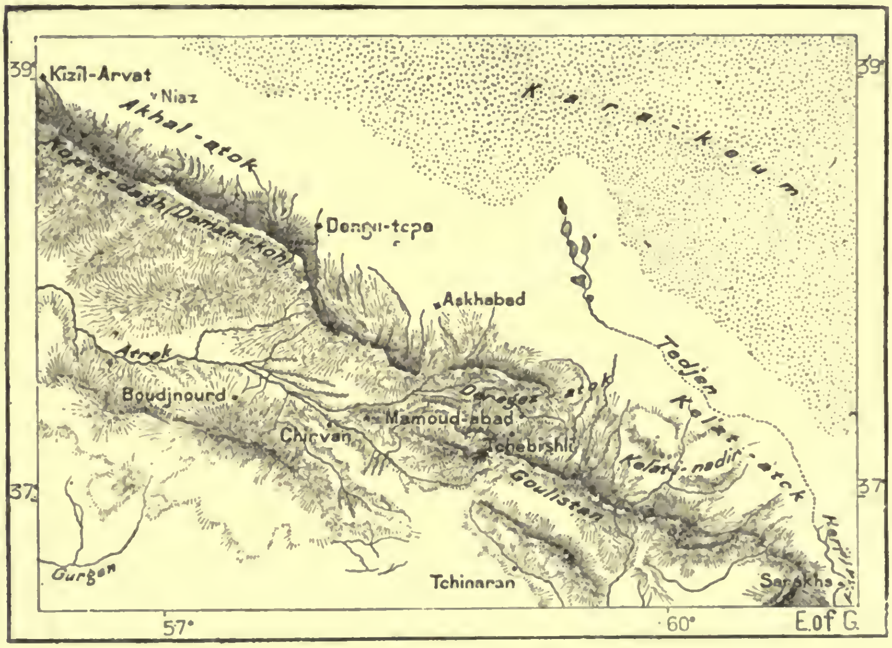
Amongst the Turkomans the practice of simulated abduction still prevails. The intended bride, enveloped in a long veil and with a kid or lamb in her arms, mounts on horseback, gallops off at full speed, and by sudden turns pretends to escape from the abductor pursuing her at the head of a troop of friends. Two or three days after the wedding she feigns a fresh escape, remaining a full year with her parents, in order to give her husband time to go kidnapping, and thus pay her dowry in captive slaves. Other social events are associated with old symbolic customs. Thus it is not sufficient to weep for the dead, but every day for a twelvemonth the relations and friends are expected to vent their grief in dismal howlings at the very hour when the death took place, without, however, for a moment interrupting their ordinary pursuits. They thus often take to howling in the very

TURKOMAN CUSTOMS—PURSUIT OF THE BRIDE.

act of eating, drinking, or smoking, to the great amazement of the uninformed "stranger within their gates." If the departed was a famous warrior, a *yoksa*, or barrow, is raised over his grave. Every bravo of the tribe contributes at least seven bushelfuls of earth to the mound, whence those hillocks 25 to 30 feet high dotted over the steppe.

All the Turkomans speak closely related varieties of the Jagatai Tûrki language, and all are Sunnite Mussulmans. The most zealous are probably those of the Persian frontier, who find in their pious hatred of the Shiah sectaries a pretext for their forays and the hard fate they impose upon the captives. They also claim the right of plundering and murdering the orthodox Khivans and Bokhariots, but only in

Fig. 120.—Tekke Turkoman Oasis in the Atok.
Scale 1 : 4,200,000.



60 Miles.

virtue of the *lex talionis* calling upon them to avenge former massacres. So recently as 1830 they ventured in frail barks on the Caspian, to capture slaves on the Baku coast, and the Russian naval station of Ashu-rade was founded to check their incursions. Since then their ships of war have become fishing craft. Certain Persian districts have become completely depopulated by these raids, and elsewhere the surviving inhabitants shut themselves up in villages resembling fortresses, where the scouts watch day and night to give the alarm. In more exposed places towers are erected at intervals of 100 paces. Yet in spite of all these precautions the number of Persians captured during one century has been estimated at a million, and as many as 200,000 slaves were at one time in bondage in Turkestan.

Marauder by profession, the "black" Turkoman devotes himself entirely to this one pursuit. He tends and trains his horse, his comrade in toil and danger, leaving all other work to the women and slaves. In the saddle he "knows neither father nor mother," and his highest ambition is to bring back captives to the camp. When he starts on an *alaman*, or foray, at midnight—for he loves darkness like the beast of prey—an *ishan*, or itinerant dervish, never fails to bless him and beg the favour of heaven on his noble enterprise. All feeble or decrepit captives are slaughtered, the rest are chained in gangs and driven away at the point of the spear. The priest alone is spared, lest his fate might bring ill-luck on the freebooters.

Fig. 121.—Area of the Turkoman Raids South of Kizil-Arvat.

Scale 1 : 3,320,000.

Forts.

60 Miles.

Formerly most of the prisoners were destined to perish miserably in bondage. But many of their sons, and often the slaves themselves, gradually bettered their condition by their tact or intelligence, mostly far superior to that of their masters. After being sold in the Khiva and Bokhara markets, many Persian captives succeeded in becoming traders, high officials, or governors of districts. In the still semi-independent khanates to them are usually intrusted the more delicate and best-paid duties. Although originally Shiah heretics, they soon conform to the prevalent Sunnite form of worship. Since the abolition of the slave trade in the khanates, captures are now made only with a view to their ransom, a trade formerly carried on by some of the Khorassan chiefs themselves, who often made handsome profits by the sale of their own subjects.

Of late years the raids have greatly diminished, owing mainly to the progress of the Russians on the west, north, and north-east, but also partly to a more systematic resistance on the side of Persia. Here the Turkomans now find themselves opposed by Kurd colonists settled by the Persian Government in the upland valleys, and who bravely defend their new homes. The Turkomans, seeing themselves thus hemmed in on all sides, are gradually obliged to turn from pillage to farming. The Goklans are already mostly peaceful agriculturists, and cultivate the silkworm with success. Numerous Tekke hordes also are now settled on the

land, and enlarging the domain of their oasis by means of irrigating works. Their moral tone has even improved, and in their interviews with European travellers they will warmly defend themselves against the charge of brigandage. The national saying, "If marauders attack thy father's tent, take part in the plunder," has lost all significance, and most of the tribes easily pass from the nomad to the settled state. The cultivation of certain alimentary plants is even consistent with a semi-nomad existence. To raise the cereal known from them as the *Polygonum Tartaricum* (sarrasin), the Tatars fire the surface vegetation, sow and reap within two or three months, and then betake themselves elsewhere. The herdsmen migrate regularly with the seasons between the same pastures on the Iranian tableland and in the plains, and are thus in a transition state between a nomad and settled life. Hence the Russians expect to reduce the tribes of South Turkestan as they have already reduced their northern kinsmen, by erecting forts commanding their winter camping grounds. They have also established depôts for provisions at certain intervals, and are pushing on the line of railway running from the south-east corner of the Caspian towards Askhabad and Merv.

The horse and camel, inseparable companions of the nomad Turkoman, must naturally diminish in numbers, at first through the hopeless struggle with the Russians, and then through the increasing development of agriculture. Most of the native camels are of the Baktrian or dromedary species, with one hump only, smaller and weaker than the Arabian, but more capable of enduring heat. They can make 24 miles a day under a burden of 400 or even 500 lbs. They move untrammelled about the tents, and will occasionally return to the steppe for months at a time. The Turkoman horses, a cross between the Arab and the native breed, although unshapely, have scarcely their equals for staying power. Instances have been cited of 600 miles covered in five or six consecutive days; for, as the proverb goes, "One brigand's journey is better than two of a merchant." These horses, highly esteemed by the Russian officers, have longer heads, narrower chests, more shaggy legs than the pure Arab, but they are less affected by climate, hunger, and thirst. Brought up with the children in the tent, and caressed by woman's hand, they are remarkably gentle and intelligent, and carry their heads well. The Turkoman horse is well cared for, and he may often be seen with a warm felt housing when the tent is in shreds and the family in rags.

The Kara-Kalpaks and Kirghiz.

The Kara-Kalpaks, or "Black Caps," form geographically the transition between the southern Turkomans and northern Kirghiz. Survivors of a powerful nation, they are still represented in a fragmentary way throughout a vast area—in the Russian Governments of Astrakhan, Perm, and Orenburg, in the Caucasian province of Kuban, and in Tobolsk, Siberia. Scattered by forced or voluntary migrations over these extensive regions, they still claim to belong originally to the Kharezm. A few small groups are found in the Zarafshan valley, but the bulk of the race still forms a compact body in the humid plains of the Lower Oxus, and along the east

coast of the Aral Sea. Here they number probably 50,000, and in the whole Russian Empire about 300,000. On the Aral Sea the Black Caps, so named from their high sheepskin head-dress, are mostly tall and robust, with broad flat face, large eyes, short nose, prominent chin, broad hands. Yet their women have the reputation of being the most beautiful in Turkestan. But they can scarcely be said to present a distinct racial type. Widely diffused as they are amongst different peoples, they seem to have been diversely mixed, and in Tatary they blend imperceptibly with the hybrid Sartes. Of a gentle, peaceful disposition, and devoted to agriculture, they are generally the butt of their nomad neighbours, who regard them as the dullest of mankind. And there are certainly some grounds for this view, for their expression lacks fire, and they generally look stolidly on with open mouth and hanging lower lip. In a few generations this lethargic race will probably have ceased to exist as an independent nationality in Turkestan.

The great Kirghiz nation, numbering perhaps 2,000,000, according to Krasovsky even 3,000,000 souls, and whose domain, as large as all European Russia, stretches from the Lower Volga to the Tarim basin, and from the Oxus delta to the Irtish river, is numerically the most important nomad race in Asia. But it has no ethnical cohesion, and is split up into endless subdivisions. The people compare themselves to the sea-sands, scattered far and near by the winds, but never diminishing in numbers. The two main divisions of the race answer to the relief of the land. In the Aralo-Caspian and Ob basins dwell the Kirghiz-Kazaks, by far the more numerous. In the upland Tian-shan, Alaï, and Pamir valleys roam the Burut, or Kara-Kirghiz ("Black Kirghiz"), called also *Diko-kamennîe Kirghizî*, or "Wild Mountain Kirghiz," the "Block Kirghiz" of English writers.

The Kirghiz call themselves Kaïzaks, or Kazaks, although the term Kirghiz, or rather Krghîz, is not unknown, and interpreted by them to mean "Forty Girls," in reference to their legendary descent from forty young women and a red dog. They are divided into four hordes: the Great Horde (Ulu-Yuz), the oldest, chiefly south of Lake Balkash and near the Tian-shan; the Middle Horde (Urta-Yuz), mainly in the low hilly region between the Aralo-Caspian and Ob basins; the Bukeyevskaya, or Inner Horde, in the Orenburg steppes; the Little Horde (Kachi-Yuz), stretching westwards far into European Russia. In spite of its name this horde is by far the most important in numbers, socially and politically. As with the Turkomans, the *soyuz*, or confederacy, is divided into secondary groups, and these into clans and families comprising from five to fifteen tents each. Each of these *aûls*, or little communities, lives in absolute independence, reluctantly acknowledging the supreme control of the Russians, but recognising no other authority except that of the heads of families and the arbitrators chosen by themselves to settle their differences. The Russians are satisfied with imposing a tax of about five shillings per tent; but they find some difficulty in discovering all the encampments hid away in the hollows, between sand dunes, amongst the reedy marshes, or under cover of the forests, and the camping grounds they come

KIRGHIZ HORSEMEN.

upon are often found abandoned by the tribes migrating to and fro with the seasons. Hence the official returns are always under the truth, although fresh defaulters yearly come to light. In 1837, the first year of the impost, 15,500 tents only could be discovered in Orenburg, but these had increased in 1846 to 67,280, and in 1862 to upwards of 155,000. In 1872 the first census taken in the provinces of Turgai and Uralsk returned 605,000 nomads, and the Bukeyevskaya horde, west of the Ural River, is variously estimated at from 160,000 to over 200,000 souls.

Being without chiefs, all the Kirghiz consider themselves as more or less nobles. When two meet together, the first question is, "Who are your seven ancestors?" and all, down to the children eight years old, can repeat in reply their genealogies to the seventh generation. Those on whom the Russians have conferred certain privileges, and whom they have made "sultans," without, however, exempting them from the poll tax, are surrounded by a riff-raff of Teleguts, or refugees, strangers, and slaves, forming bands of armed retainers during the former intestine wars, and who now tend their masters' flocks and till his land. This class is much despised by the free nomads, and is excluded from all clanship, living apart from the tribe in separate camps with their masters, who are equaly hated by the people. The *biis*, or "elders," are the judges elected by the clan, to whom all appeal for a settlement of their disputes. Each tribe is distinguished by a particular rallying cry used by the members in their festive and hostile gatherings.

Fig. 122.—A Wealthy Kirghiz.

The Kirghiz language, which is spoken with great uniformity by all the tribes, is of pure Tûrki stock, unaffected by foreign influences, beyond a few Mongol, Arab, and Persian words. In the north Russian has already made some encroachment on its domain, and the Orenburg Kirghiz even converse in this language. But the Slav colonists have probably borrowed more in their colloquial speech from the nomads than these have from their conquerors. Of all the Kirghiz tribes, the Kipchaps of the Middle Horde seem to have best preserved their original type, ancient usages, and purity of speech. The origin of the race has been much discussed by ethnologists, some of whom have even regarded them as Aryan Scythians like those of the Euxine shores. But their most marked affinities are now with the Mongols and Tatars, with whom they form one linguistic group. They have squat figures, short thick necks, small and oblique eyes, scant beard, tawny or dirty brown complexion. Obesity is common amongst the Orenburg tribes, and is considered by the nobles as a sort of distinctive mark enhancing their dignity. They are mostly very robust, but indolent and soft uncouth, and heavy in their carriage, and slightly bandy-legged from passing

half their time in the saddle. Like the Nogai Tatars, they are often dull and morose, and few amongst them have the courtesy, heartiness, and good-humour of the Bashkirs, or the defiant look of the Turkomans. In their songs the women celebrate the indolence of the men and their own laborious life. Accustomed to regular work, they are generally more graceful than the men, whom they also surpass in moral qualities. On feast days they love to deck themselves in high velvet or brocaded caps adorned with plaques of metal, pearls, and embroidery, and prolong their tresses to the ground by means of ribbons and horsehair. They use rouge and other cosmetics even more freely than European women.

Fig. 123.—A Kirghiz Woman.

The steppe Kirghiz are essentially nomads, shifting their quarters on the slightest pretext, a bad omen, a storm, and the like. In 1820 most of the Astrakhan tribes left their camping grounds in order to return to Asia, on the simple report that the Government was preparing to have their census taken. Even the "sultans" have declined to occupy the fixed dwellings erected for them, and continue to live in tents, locking up all their valuable effects in the houses, for all alike feel that a sedentary life in settled abodes would eventually entail loss of freedom. The Kirghiz yurt, like those of the Kalmuks and the Turkoman kibitkas, is a simple framework of wood, covered with red cloth for some of the "sultans," with white felt for the wealthy, and with ordinary felt for the common folk, the very poor substituting for felt bark of trees, reed, or grass matting. In half an hour a whole aûl has vanished, migrating northwards in summer and southwards in winter.

The Kirghiz-Kazaks lack the warlike spirit of their Turkoman kinsmen. Nevertheless they long resisted the Slav invaders, and even when accepting the Czar's supremacy in 1734, they fancied they were merely performing an idle formality. Hence, when they found that the Russians meant it seriously, the war was renewed, and lasted intermittently for over a century. A last revolt took place in 1870, when they destroyed a Russian village and besieged Fort

KIRGHIZ CROSSING A RIVER.

Alexandrovsk. But they are naturally of a peaceful temperament, and their occasional *barantas*, or armed forays, are usually restricted to horse-stealing. Their arms are chiefly used in the chase, of which they are excessively fond, eagerly pursuing the steppe wolf, and training the falcon, vulture, and even the royal eagle to capture the quarry. But the employment of the eagle is not unattended with danger, for when they lose sight of the wolf or fox, these birds will swoop down on their master instead, striking him from the saddle, burying their talons in his flesh, and tearing out his eyes.

The Kazaks call themselves Sunnites, but are such strangers to all fanaticism that they might just as well pass for Shamanists or pagans. Some will even tell the inquiring traveller that they do not know to what religion they belong. They have become Mohammedans only since their contact with the Russians, who have mainly contributed to make them followers of the Prophet by taking the fact for granted. Still the great bulk of the people remain what they always were, while accepting the elements of terror from all the surrounding religions. Their Mohammedanism consists chiefly in hating Christians and the Shiah heretics, and in believing themselves privileged to rob, plunder, and even slaughter them. Their religious practices have otherwise little to do with the precepts of the Koran. They dread especially the evil eye, and never fail to deck the head of the young camel in party-coloured ribbons in order to protect him from evil influences. Everything is construed into an omen for good or evil—the fall of a thread on a black or white stone, the red or yellow hue of the flame from oil thrown on the fire, and the like. They endeavour to conjure the wicked spirits by sacrifices or the offering of hair, rags or ribbons attached to reeds, bushes or stakes fixed in the ground. In the mountains they also suspend shreds of garments to the branches of the trees shading the medicinal springs. When setting out on a journey or warlike expedition they sew to the back of their hats one or two little bags containing written prayers, intended at once to give them luck and inspire them with courage.

Of all Mohammedan practices polygamy has been most readily accepted, not by the masses, who are too poor to pay more than once the *kalim*, or price of a spouse, but by the wealthy owners of hundreds and thousands of live stock. As amongst most barbarous peoples, the formality of a sham abduction is still kept up here and there. But girls are often really carried off as the prize of war. They are sought especially amongst the Kalmuks of the Tian-shan, for the Kazaks are by tradition exogamous, seeking alliances outside the tribe or race, a circumstance which sufficiently explains the striking physical resemblance between them and their Mongolian neighbours. The old customs associated with the burial of the dead are still maintained in full vigour. The mourning rites, including much wailing and weeping, are renewed on the fortieth, and again on the hundredth day of the funeral, on the first, and lastly on the ninth anniversary. The relatives beat their breasts and utter lamentations night and morning before a "lay figure" dressed in the garments of the departed. The funeral mounds on the crests of the hills, marked by spears with horsehair banners, are objects of great respect. Some

hills are entirely covered with pyramids, turrets, domes, porticos, and other monuments in honour of the dead. These monuments will sometimes take the form of cradles for infants, or of the tents in which their parents lived. Numerous barrows occur also on the open steppe, one of which, on the banks of the Turgai, is 106 feet high and 966 feet round. At these places the people make their genuflexions, offering clothes, provisions, and money to their departed friends. These gifts are appropriated by the poor wayfarers as presents from the dead; but they are themselves expected to make some slight offering in return.

Although in the general development of human culture husbandry is regarded as an advance upon the pastoral state, this is not the case with the Kirghiz. Amongst them the farm labourer is a person fallen from a better position, who has lost all the pleasures of life and freedom. Most of them are still nomads, and those who are compelled, for want of herds, to till the land about the Russian cantonments in the second generation relinquish the name of Kazak, dress in the Russian fashion, and call themselves Christians. Along the outskirts of the Kirghiz domain the Russian traders get the natives into their power by means of loans at exorbitant rates of interest, and their example finds faithful imitators in the interior of the steppe amongst the "khans," or wealthy Kazaks. Some of these khans are owners of hundreds of camels, thousands of horses, and as many as 20,000 sheep. The horned cattle introduced since about 1750 are rather less numerous, and ill adapted to the climate. In 1872 the live stock included altogether 120,000 camels, 1,720,000 horses, 600,000 oxen, 2,000,000 sheep, and 180,000 goats.

Unacclimatized animals perish from the rigour of the climate. The attempts to introduce the Baktrian dromedary have failed, the two-humped camel alone thriving on these steppes. The sheep, all of the fat-tailed breed, are usually so strong and tall that the children amuse themselves by mounting them. The flocks are always guided by a few goats, and at the beginning of winter, before the streams are frozen hard enough to bear their weight, hundreds sometimes perish in the attempt to follow their light-footed leaders. The Kirghiz horse, though of sorry appearance, does his 50 and even 60 miles a day at a trot, eats what he can pick up, sleeps on the sands, and resists the extremes of heat and cold. In their *baïgas*, or races, the Kirghiz and Kalmuk jockeys easily do 12 miles in half an hour, and some riders have been known, by relays of horses, to cover 180 miles in 34 hours. The finer breeds, *karabaïr*, or "half blood," and *argamak*, or "full blood," have less staying powers.

The Kara-Kirghiz, or Buruts, numbering from 350,000 to 400,000 on both slopes of the Tian-shan, differ but slightly in type, speech, and customs from their steppe kindred. Nevertheless they are evidently more affected by Mongol influences, and are not to be distinguished physically from the Kalmuks. Most of their women are regarded by the Russians as very ugly. They do not veil their features, and on gala days wear a head-dress like that of their Turkoman sisters, covered with coins and medals, and making a jingling noise at every step. Of drunken and dirty habits, they never wash, and merely wipe their kitchen utensils

with the finger, for fear of "wilful waste." The Buruts are altogether ruder and more ignorant than the steppe Kirghiz, but have the reputation of being more honest and open. Notwithstanding their present debased condition they seem to have been formerly a civilised people, and the Chinese speak of the "Ki-si-li-tzi" as a powerful industrious nation in commercial relations with distant lands. But multitudes were swept south and west by the waves of migration, and those who remained behind were gradually driven to the upland valleys. Then came the Russians, who exterminated all the Siberian steppe Kirghiz east of the Irtish. Of their old civilisation they have retained several industries, and they can still build windmills, forge iron, and weave fine materials. Though lacking the aristocratic vanity of the Kazaks, their *manaps*, or chiefs, have acquired great power in some tribes, disposing even of the lives of their subjects. The memory of their past glories has not quite perished, and their poets and improvisatori still sing of the heroes (*batir*) who pierced a thousand men at a spear's thrust, and raised up the mountain on which slumbered their bride. Attempts have been made to discover in these songs the fragments of epic poems, and some of their invocations breathe a Vedic spirit.

"O, thou on high, Lord of heaven! thou who causest the verdure to spring from the ground, and the leaves from the tree; thou who clothest the bones with flesh and the head with hair, heaven, who hast given birth to the stars!

"You, rulers sixty, who have given us father, and thou, Paï Ulguen, who hast given us mother!

"Give us cattle, give us bread, give a chief to the house, give us a blessing!"

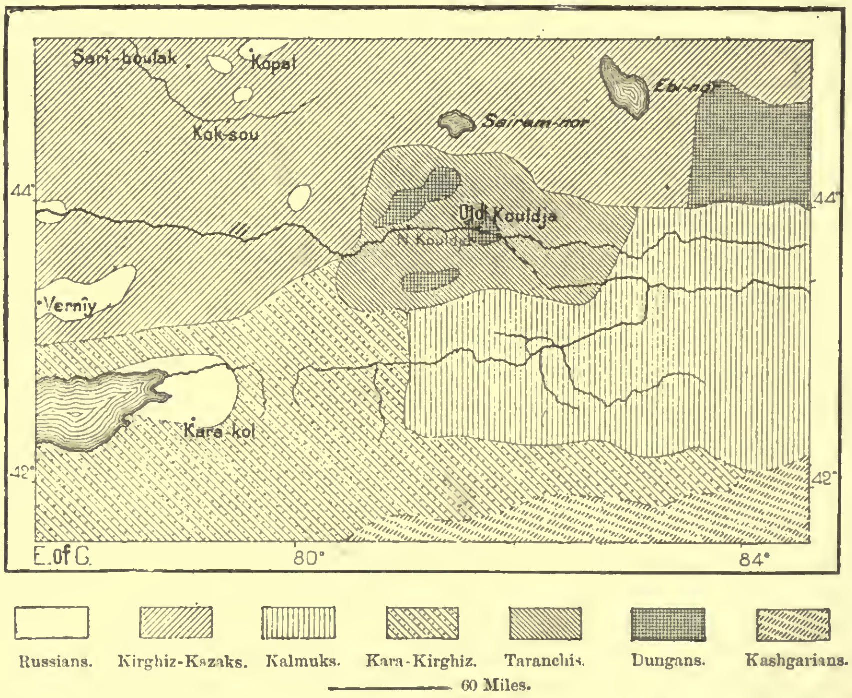
The Kara-Kirghiz are divided into many tribes. Those of the west are grouped under the collective name of *On*, or "Right," those of the Tian-shan slopes forming the *Sol*, or "Left" branch. The latter are in close contact with the Tian-shan Kalmuks, partly descended from those who escaped from the Astrakhan steppes in 1771, and large numbers of whom perished on the route. Vanquished by the Kirghiz in a battle fought south of Lake Balkhash, the Kalmuks took refuge in the Eastern Tian-shan valleys by the side of their kinsmen, the Torgs, or Torguts, Buddhists like themselves, and of kindred speech. The Asiatic Kalmuks differ little from their European brethren. They have the same flat face, narrow oblique eyes, pale lips, sad smile, massive frame. The women of many tribes dye their teeth black. The Kalmuks have trained the ox as a beast of burden and for the saddle. No people have suffered more from the ravages of small-pox. A family attacked in winter is a family lost, and should any one enter the tent unguardedly he gets drunk on brandy, while his friends drive the evil one out of his body with scourges. The Kalmuks pay little heed to the dead, seldom burying them, and usually leaving the bodies to be devoured by the camp dogs.

The Taranchis and Dungans.

In the fertile valley of the Ili the predominant people are the Taranchis, an agricultural nation of Tûrki stock, but evidently largely affected by Aryan elements.

They are descended from Kashgarian colonists settled here by the Chinese in the middle of last century. Although nominal Mussulmans, they have little knowledge of the precepts of the Koran, and the women never veil their features. All the inhabitants of the Ili basin except a few Russians came originally from Chinese territory in the south and east. The best known are the Dungans, who dwell chiefly in the towns. The Solons, descended from military Tungus colonists settled here in the eighteenth century, are dying out from the effects of opium. The Sibos, or Shibos, who formed with the Solons an army of eight "banners," were of pure Manchu stock, but have now become much mixed with native elements. This region of Kulja has in modern times been the scene of the most frightful massacres, often ending in the extermination of whole races. In 1758 the Manchus

Fig. 124.—Populations of the Ili Basin.
Scale 1 : 6,000,000.



are said to have put to death all the Kalmuks of the Ili plain without distinction of age or sex. Over a million human beings appear to have perished on this occasion. A century afterwards the Taranchis and Dungans, introduced by the Manchus to replace the Kalmuks, avenged on their masters the blood they had caused to flow. A civil war, in which no prisoner was spared, raged between the colonists and their rulers, ending in 1865 with the wholesale massacre of the Manchus, Solons, and Shibos, the young women alone escaping. Populous cities were changed to heaps of ruins, and according to the native accounts nearly 2,000,000 perished altogether. When the Taranchi and Dungan rule succeeded to the Chinese no more than 130,000 people remained in the formerly populous valley of the Ili.

The Uzbegs.

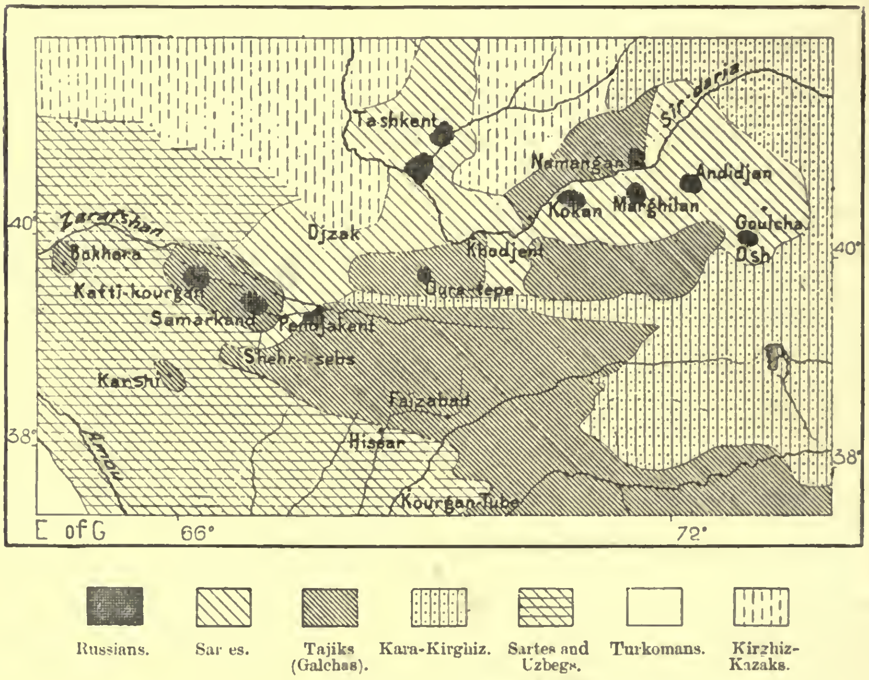
Before the arrival of the Russians in the Sir and Amu basins the political supremacy in the civilised states belonged to the Uzbegs of Tûrki stock, speaking the Jagatai or Uigur, one of the most polished languages of the Tatar family. But of the million Uzbegs dwelling in the Aralo-Caspian lands a large portion are certainly mixed with Iranian elements, as shown by their features, carriage, and character. From Ferghana to Khiva, and thence to Afghan Turkestan, the contrast between the different tribes calling themselves Uzbegs is often as great as between different races. The most striking trait of those crossed with Persians is the full Iranian beard associated with the flat features and oblique eyes of the Tûrki race.

Fig. 125.—Sarte Type.

The Uzbegs claim descent from the famous Golden Horde, so named apparently from the gold leaf covering the poles of the royal tent. But the Mongol and Tatar elements had evidently long been intermingled in their race. The famous Uigurs, from whom they take their present speech, form probably the chief Tatar element in the Uzbeg populations of the present day. The national name means "freeman," unless it comes from one of their rulers of the Jenghis Khan dynasty, by whom they were converted to Islam early in the fourteenth century. But such as they are, the Uzbegs still present a marked contrast, on the one hand with the pure nomads of the country, on the other with the completely sedentary Aryans. Formerly more civilised and agricultural than at present, they have again partly returned to the nomad state, some even passing the whole year in a tent set up in the garden, and using their house as a granary. Still divided into tribes and clans, some bearing the same name as those of the Kirghiz, they reckon as part of their nation certain clans which might equally be claimed by the Kara-Kirghiz. Such are the Turuks, or Tûrks, of Ferghana, possibly the near kinsmen of those of like name who have risen to such historical importance farther west. Of all the Uzbeg tribes the Manghits, to whom belong the Khans of Bokhara, claim to be the oldest and noblest. They are zealous Sunnites, and nearly all the "saints," as well as the brigands, over nine-tenths of the entire population, are Uzbegs. Yet the Mollahs, or sacerdotal class, are nearly all Tajiks, especially in the Zarafshan district. Although the political masters of the country for centuries, the Uzbegs have remained honest and upright

compared with the Iranians, who form the bulk of the officials and tax-gatherers. The contrast between the character of the two races is illustrated by the legend of a princess, who had promised her hand to whoever of her two suitors should dig an irrigation canal across the Bek-pok-dala steppe. The Uzbeg set to work honestly, and continued to dig till he came to a cascade, which is still shown. But he lacked the time to finish the work. The Tajik took things more easily. Before the appointed day he had spread reed matting over the surface of the desert, and when the princess ascended her tower to see the waters of the canal sparkling in the

Fig. 126.—Population of Ferghana.
Scale 1 : 8.000,000



distance he showed her his work glittering in the sun. The unsuccessful rival in despair hurled his spade into the air, and in its fall the instrument cleaved his head from his body.

The Sartes, Tajiks, and Galchas.

The loss of political power will probably tend to bring the Uzbegs into closer contact with the Sartes, and in some places even blend them into one nationality. The Sartes are a mixed people, in whom the Iranian element prevails. The term, however, has a social rather than an ethnical meaning, all the settled inhabitants of the towns and villages except the cultured Tajiks being called Sartes, irrespective of their origin. Some writers even include the Tajiks in this class, which would thus comprise all the civic population of Turkestan. "When a stranger presents himself and eats your bread call him a Tajik; when he is gone you may

TAJIKS OF BOKHARA.

call him a Sarte." Such is the local etiquette in the matter. As soon as the Kirghiz or Uzbeg nomad settles in a town his children become Sartes. The term is also applied to the Mazang or sedentary Gipsies, as opposed to the Luli, or nomad Gipsies, and to the *Kurams* of various stock—Uzbeg, Kazak, Kara-Kalpak—settled in the neighbourhood of Tashkend. Most of the Ferghana people call themselves Kuram, or "confused," or "mixed," so conscious are they of their varied origin. The language of the Sartes varies with the locality—Tûrki in Ferghana and Kulja, Persian in Khojend and Samarkand. Representing the mixed element in these regions, the Sartes are increasing most rapidly, and although now despised by those of purer race, are destined ultimately to prevail. The Kirghiz, making a play of words with their name, call them *Sart-it*, or "Yellow Dogs," and would feel dishonoured by an alliance with them. They have a general resemblance to the Jews in character, and even in features, and fully deserve their name, if it really means "broker," although, according to Lerch, it has simply the sense of "citizen." Like the Jews, also, they are fond of instruction, and are far more enlightened than the Uzbegs. They are gradually turning to agriculture and reclaiming the uplands, and, according to Fedchenko, their colonies thrive best.

Fig. 127.—A Tajik Mollah.

The Aryan race is represented in Turkestan mainly by the Tajiks, kinsmen of those who, under the name of Tates, dwell on the opposite side of the Caspian. The word Tajik, meaning "Crowned," seems to show that when so named the race held the political supremacy. It still belongs to them from the economic point of view, for most of the merchants, bankers, and landed proprietors belong to this class. In several districts they call themselves Parsivan—that is, Persians; and they are really Iranians, differing but slightly from those of Persia, and even their speech is but little affected by Tûrki, Arabic, or Mongol elements. Nevertheless their frame is somewhat more massive than that of the Persian proper, while the type of features remains much the same. They have a long head and high brow, expressive eyes shaded by dark eyebrows, finely chiselled nose, florid complexion, full brown hair and beard. Those of the Upper Oxus valley bear a striking resemblance to the Kashmirians. The Tajiks form evidently the intellectual aristocracy of Turkestan, where all who pride themselves on polite manners endeavour to imitate

their speech. But beneath the exterior culture are concealed many social vices—avarice, rapacity, gambling, and licentious morals.

The Galchas, agricultural highlanders on the western slopes of the Pamir, in Kohistan, Wakhan, Karateghin, Shignan, Darvaz, and Badakshan, are also of Iranian stock, but of a purer type than the Tajiks. Their chiefs claim descent from Alexander, and the people from the armies of the Macedonian king, and they are noted especially for their broad head, the delicacy and beauty of their slightly arched nose, and firm lips. De Ujfalvy has met with some closely resembling the Celtic peasantry of Savoy. Of the five Kohistan tribes four are able to converse together, while the fifth, the Yagnaubs of the Yagnaub valley, have a distinct Aryan speech, unintelligible to the others. The Galchas contrast favourably with the Sartes and Tajiks in their simple habits and upright character. Amongst them hospitality is a sacred duty, and every village contains a house reserved for strangers. Slavery has never existed in any Galcha land, where all are alike free and in the enjoyment of self-government. Although polygamy is authorised by their religion, they seldom have more than one wife. Still women are not considered the equals of the men, and of the inheritance the sons take two-thirds, the daughters one-third only.

The Tajik Mussulmans of Upper Turkestan have preserved some traces of the old fire-worship, and it was probably through them that certain practices associated with this cult have been propagated to the extremities of Siberia. During the feast of the fire or sun bonfires are kindled like those of the Bal-tinne in Ireland, supposed, like them, to purify all passing through the flames. The sick make the round of the fire and pass over it thrice, and when too weak to do this they fix their gaze on the flames while being exorcised. Amongst most of the Galchas lights must not be blown out, and torches are kept burning round the cradle of the new-born and the couch of the dying. Here and there along the banks of the Panja, or southern branch of the Upper Oxus, are still to be seen certain towers attributed to the Zardûshti, or Fire-worshippers.

To the numerous races of this region have recently been added some Great Russians, Little Russians, Poles, and other Slavs. Though numbering scarcely a tenth of the population, the political supremacy of their race secures for them an influence out of all proportion with their numbers. Yet, apart from the military element, the Russian colonists proper have hitherto played a very subordinate part in the development of the land. The Cossacks have even become more assimilated to the Kirghiz than these to their conquerors. In many places they have adopted the dress and habits of the natives, even dwelling like them in tents.

Nevertheless the Russification of these races has already begun at certain points, usually the farthest removed from Europe. To the Cossack soldiery occupying isolated stanitzas in the Tian-shan highlands have here and there succeeded free colonists engaged in reclaiming the land. A peasant from the centre of Russia, sent in 1865 by his commune to explore the Issik-kul districts, settled there, and in two years was joined by a hundred others. Since then fresh colonies have been established in the Tian-shan valleys, and the work of the plundering Cossacks has

now been replaced by a systematic cultivation of the soil. Groups of Russian settlers are spreading regularly between the Irtish and Narin valleys, and this line will doubtless be soon extended through Ferghana towards the Western Pamir valleys. The Russians already form, from Caucasia to the Urals and thence to the Tian-shan, a complete semicircle round the Turkestan populations, and this zone grows yearly broader and longer. Kirghiz and Turkomans, Uzbegs, Sartes, and Tajiks, enclosed within the compass of the advancing Slav populations, must sooner or later undergo the fate of the Kazan Tatars, Chuvashes, and Mordvinians of the Volga.

VII.—STATES OF THE ARALO-CASPIAN BASIN.

I.—BAKTRIANA, OR AFGHAN TURKESTAN.

The states or provinces of this region can have no well-defined frontiers. A plateau on the east, highlands on the south and western deserts form their natural limits, and these limits advance or recede with the abundance of the snows, the rich pastures, the progress of irrigation, the encroachments of the sands. For a portion only of its course the Oxus serves as northern frontier to these Turkestan districts, here separating them from Bokhara. Of the populations of the Western Pamir those in the north are regarded as gravitating towards Bokhara, those in the south towards Afghanistan. But above these minor states there is already cast the double shadow of the rival powers aiming at the supremacy in Asia. Behind Bokhara looms Russia, already mistress of that land; beyond Afghanistan, England reigns supreme over the Indian peninsula, and the inhabitants of the intermediate region, although still enjoying a semi-independent status, feel none the less that their future destiny is involved in the rivalry of these two powers. The diplomatic negotiations between London and St. Petersburg had in 1872-3 provisionally arranged that the northern limits of Afghanistan should include north of the natural frontiers formed by the Hindu-Kush and its western extensions, the districts of Wakhan, Badakshan, Kunduz, Khulm, Balk, and Maimene. The two states thus disposed of territories and peoples seldom even visited by European travellers, and still but partially explored. While seizing the strategic points in Afghanistan near the Indian frontier, England naturally seeks to extend this state northwards, and thus so far reduce the future domain of Russia. But Russia herself, pending the complete conquest and assimilation of the already-acquired possessions, can afford to wait. Geographically the Upper Oxus and all the northern slope of the Iranian and Afghan plateau belong to the Aralo-Caspian basin, and the growing influence of the Slav power cannot fail sooner or later to unite in a single political group the various parts of this vast region. During several months of the year Afghan Turkestan is completely cut off from Afghanistan proper, and thus remains exposed to the free advance of the Russian arms.

The historical importance of this region is well known. Here are, west of the immense semicircle of highlands and plateaux enclosing the Chinese Empire, the first depressions affording a passage over the great "divide" between the north and

south of the continent. Here passed pilgrims, traders, migratory tribes, and conquering armies. Here converged the various civilisations, with their religions, customs, and products. Here crossed the great highways of the Asiatic nations, all the more important at a time when the ocean highways were still unavailable for the commerce of the world. The routes connecting the Oxus and Indus valleys have further the immense advantage over those between Turkestan and Persia that they nearly everywhere traverse cultivated and inhabited lands, and avoid the great waterless deserts. Hence large and opulent cities could not fail to spring up along the line of these main continental routes. Here have reigned mighty rulers whose estates have stretched from the shores of the Indian Ocean to the Siberian plains, and whose capitals counted their inhabitants by hundreds of thousands. A rich harvest of discoveries may be anticipated in these Asiatic lands, destined possibly to throw light on many doubtful points in the world's history. And in this centre of gravity of the whole continent rather than at Constantinople may we not expect to see ultimately solved the great problem of political equilibrium between Europe and Asia known as the "Eastern Question?"

Wakhan.

In the Oxus basin the easternmost state is Wakhan, which is traversed by the Panja, or Sarkad, the southern branch of the Amu, for a distance of 150 miles from its source on the Little Pamir to the great bend of Ishkashim. But this extensive tract is so elevated, cold, and unproductive, that it is uninhabitable except in the sheltered spots along the river banks. The lowest hamlet is no less than 9,000, and Sarkad, the highest, 12,000 feet above sea-level. A few scattered dwellings rising still higher are occupied in summer. The only trees growing in these uplands are willows and dwarf shrubs, and nothing is cultivated except pulse and barley. Fat-tailed sheep, however, besides yaks and other horned cattle, are reared, and the people take pleasure in the pursuit of the wild goat, deer, *Ovis poli*, and in falconry.

The Wakhi people are of mixed Tajik and Uzbeg stock, speaking both a Tûrki dialect, which is their mother tongue, and Persian with strangers. Many of them are of a handsome type, with the delicate features of the Iranians, nor are light hair and blue eyes by any means rare amongst them. All are devout Shiite Mussulmans, sending their tithes regularly to their spiritual head at Bombay, though still retaining traces of the old fire-worship and of customs distinguishing them from other Mohammedans. They show greater respect than most Eastern peoples towards their women, and the wife generally takes charge of the household expenditure.

Forsyth estimates the population at about 3,000, which corresponds with a Russian document, according to which there are altogether 550 dwellings in Wakhan. The country is said to have been formerly much more populous, and even recently Wakhi colonists have settled in Sirakol and Kashgaria. But the importance of Wakhan is obviously due, not to its inhabitants, but to its geographical position on the main route between the Aralo-Caspian and Tarim basins. Through this valley lies the easiest approach to the Pamir, followed of late years by Wood, Forsyth, Gordon, and others, probably in the footsteps of Marco Polo. Comparatively easy

passes, used throughout the year by the Kirghiz and natives, lead southwards across the Hindu-Kush to Chitral and Kanjud; that is, to the Upper Indus basin. To

Fig. 128.—Kila-panja, on the Upper Oxus: Forts at the Foot of the Pamir.

protect the caravan trade from pillage, strongholds have been erected in this desolate Sarhad valley, and two well-preserved towers are still standing at Kila-panja, or

the "Five Forts," a few miles below the junction of the two streams from the Great and Little Pamir. Here resides the Mîr of Wakhan, who, like all the other chiefs of this region, claims descent from Alexander the Great. When Wood visited the country in 1838 it was practically independent of Badakshan, a tributary of Afghanistan. Before 1873 the yearly tribute consisted of slaves, generally obtained by border raids. The constant warfare resulting from this system explains the depopulation of the land and the solitude of the Pamir pastures, formerly much frequented by the Kirghiz nomads in summer.

Badakshan.

Since 1869 Badakshan has been dependent on Afghanistan, sending it a yearly tribute of about £7,200 and 500 horses. But its geographical limits are so clearly defined that this state cannot fail to retain a certain political importance. It is separated from Chitral and Kafiristan by the Hindu-Kush, here crossed by foot passes only, at elevations of over 16,000 feet above the sea. The area of Badakshan is estimated at about 8,000 square miles, and its population at 150, 000, concentrated mostly in the lower valleys sloping gently towards the Oxus. The Badakshani are nearly all Tajiks, Persian in speech, and Sunnites in religion. A few Uzbegs and other Tûrki peoples have settled in the interior, but on the whole the race has preserved the purity of its fine Iranian type.

Badakshan is divided naturally into two parts, an eastern section, bordering on Wakhan and traversed by the Panja, here trending northwards, and a western, watered by the Kokcha, or Kuchka, *i.e.* "Green" River, flowing to the Middle Oxus. Southwards runs the crest of the Hindu-Kush, crossed by the Nuskan Pass (17,000 feet) and the somewhat easier Dora Pass (16,000 feet). The two natural divisions of the country are separated by an elevated spur of the Hindu-Kush running northwards to the high plateaux skirted by the Oxus. This ridge is usually crossed by a difficult pass over 11,000 feet high, connecting the Kokcha and Panja valleys, often blocked by snow, and from the end of autumn to the middle of spring exposed to the fierce east or "Wakhan" wind. The chief centre of population in this region is the village of Ishkashim, on the south bank of the Panja, where it turns northwards to Shignan and Roshan. Ishkashim thus lies at the intersection of the natural routes running east and west and north and south, and acquires additional importance from the famous ruby mines situated 19 miles farther down the river. These gems, the more highly prized of which are of a fine rose-red tint, were formerly known as balas, or balais rubies, a word derived from Balakshan, a corrupt form of Badakshan. The Emir of Kunduz, having acquired possession of the mines by conquest, and being dissatisfied with the yield, seized all the inhabitants, and sold them, to the number of five hundred families, into bondage. When Wood visited the district it was still almost deserted and the mines abandoned. But the works have since been resumed for the benefit of the Amir of Afghanistan.

South Badakshan also possesses mines famous throughout the East, the turquoise and lapis lazuli deposits in the southern slopes of the Hindu-Kush, near the sources of the Kokcha, in the Lajurd, or Lazurd district, whence the terms

lazuli and *azure.* In the black and white limestone rocks the mines open here and there irregularly about 1,600 feet above the river. But none of them run very far in, owing to the frequent subsidence of the galleries, none of which are propped up. The finest lapis lazuli occurs generally in the black limestone. Less valued

Fig. 129.—East Badakshan.
Scale 1 : 1,500,000.

30 Miles.

are the *nili*, of a fine indigo colour; the *asmani*, a light blue; and the *sursi*, of a greenish hue. The works have been frequently interrupted from wars and other causes; yet the stones are always in the hands of the Bokhara, Kabul, and Kashgar dealers. The annual yield varies from about 1,250 to 2,500 lbs. weight. The

Kokcha basin, one of the most remarkable in Asia for its mineral wealth, is usually known by the name of Hamah-kan, or "All Mines," for it also contains rich copper, lead, alum, sulphur, and iron deposits, which have been worked from the remotest times. Copper and lead are likewise found in the mountains farther north, and in the Hoja-Mohammed chain, stretching northwards to the great bend of the Oxus. Several of the mountain torrents also wash down gold dust. Thanks to these resources and to the influence of the Greek artists of the Hellenic period in Baktriana, the Badakshani have become the best metal-workers in the East.

Badakshan is also exceptionally favoured by its healthy climate, the purity of its waters, its leafy vegetation and fertile valleys. Its apples, peaches, grapes, and melons are famous in all the surrounding lands. Its horses, too, are highly prized by the Afghan Government for their strength and sure-footedness, while its sheep

Fig. 130.—Badakshan and Kunduz.

Scale 1 : 3,600,000.

60 Miles.

supply a portion of the wool used in weaving the wonderful Kashmir shawls. Herds of swine also abound in the less populous districts; yet with all these resources the people remain mostly miserably poor, owing largely to the still prevalent feudal system, the devastating wars, the raids of the Kunduz Uzbegs, and the heavy taxes of the Amir of Kabul, aggravated by his local vassal. Till recently these princes were engaged in the slave trade, seizing even travellers passing through the country. Theoretically "infidels" alone could be enslaved, but under this term were included the Shiah heretics, and many good Sunnites were often compelled by torture to confess themselves followers of Ali. However, the exigencies of trade relieved the Hindki and Jewish merchants from the risk of capture.

In spite of wars, oppression, and slavery, the Badakshan Tajiks are described in flattering terms by the few travellers that have visited the land. They are generally courteous, respectful to their elders, and upright. The women, often of

a very fair type, are attractive, industrious, good housewives, and although Mohammedans, the poorer, at least, amongst them are not obliged to go about veiled, and enjoy free intercourse with their friends.

In Wood's time the capital of Badakshan was Jûrm, or Jerm, a group of scattered hamlets with over 1,500 inhabitants. Faizabad, the old capital, some 30 miles to the north-west, and also in the Kokcha valley, was then a mere heap of ruins, with the walls of a fortress still standing on a bluff on the left bank of the river. Faizabad has somewhat revived since it has again become the capital, yet in 1866 it had only four hundred houses. The country suffered much from the invasion of the Kunduzi in 1829, and in 1832 an earthquake destroyed most of the villages. Packs of wolves replaced the population of many districts, and travellers did not venture to cross the land without escorts.

Fig. 131.—Bamian Pass and Kunduz Route.
Scale 1 : 2,500,000.

30 Miles.

The site is still unknown of the city of Badakshan, at one time the capital of the state, and often wrongly identified with Faizabad. It stood, probably, farther east in the Dasht-i-baharak plain, about the confluence of the three rivers, Zardeo, Sarghilan, and Vardoj, or Badakshan. Here is, at present, a summer residence of the emir. In the western division of the country rises a magnificent peak south of the town of Meshed, and known as the Takht-i-Suliman, or "Soliman's Throne," so called from a king who, according to the legend, took refuge here from the scorpions of the plain. A chain of hands, reaching from the base to the summit of the mountain, passed his food up; but the scorpions were not to be done, for one of them, concealing himself in a bunch of grapes, was passed up also, and thus contrived to inflict the deadly sting.

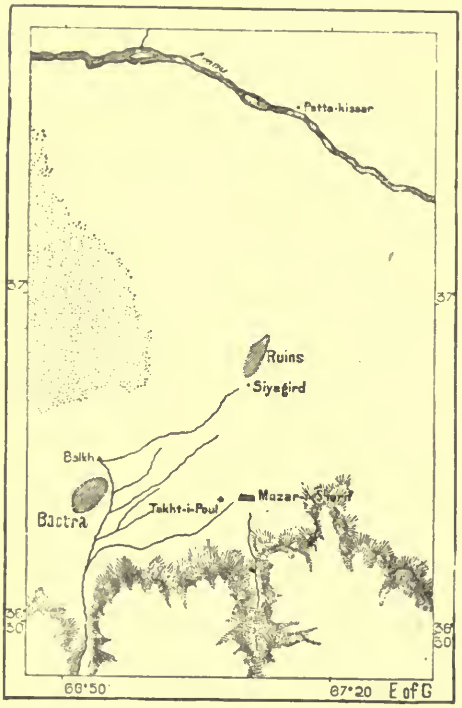
The present capital lies too much in the heart of the mountains to become a large trading-place. Rustak, rendezvous of the Hindki, Afghan, and Bokhara

merchants, is better situated on the plain, some 25 miles east of the Kokcha and Oxus confluence, and at the junction of the Kashgar, Chitral, Balkh, and Hissar caravan routes.

Kunduz and Bamian.

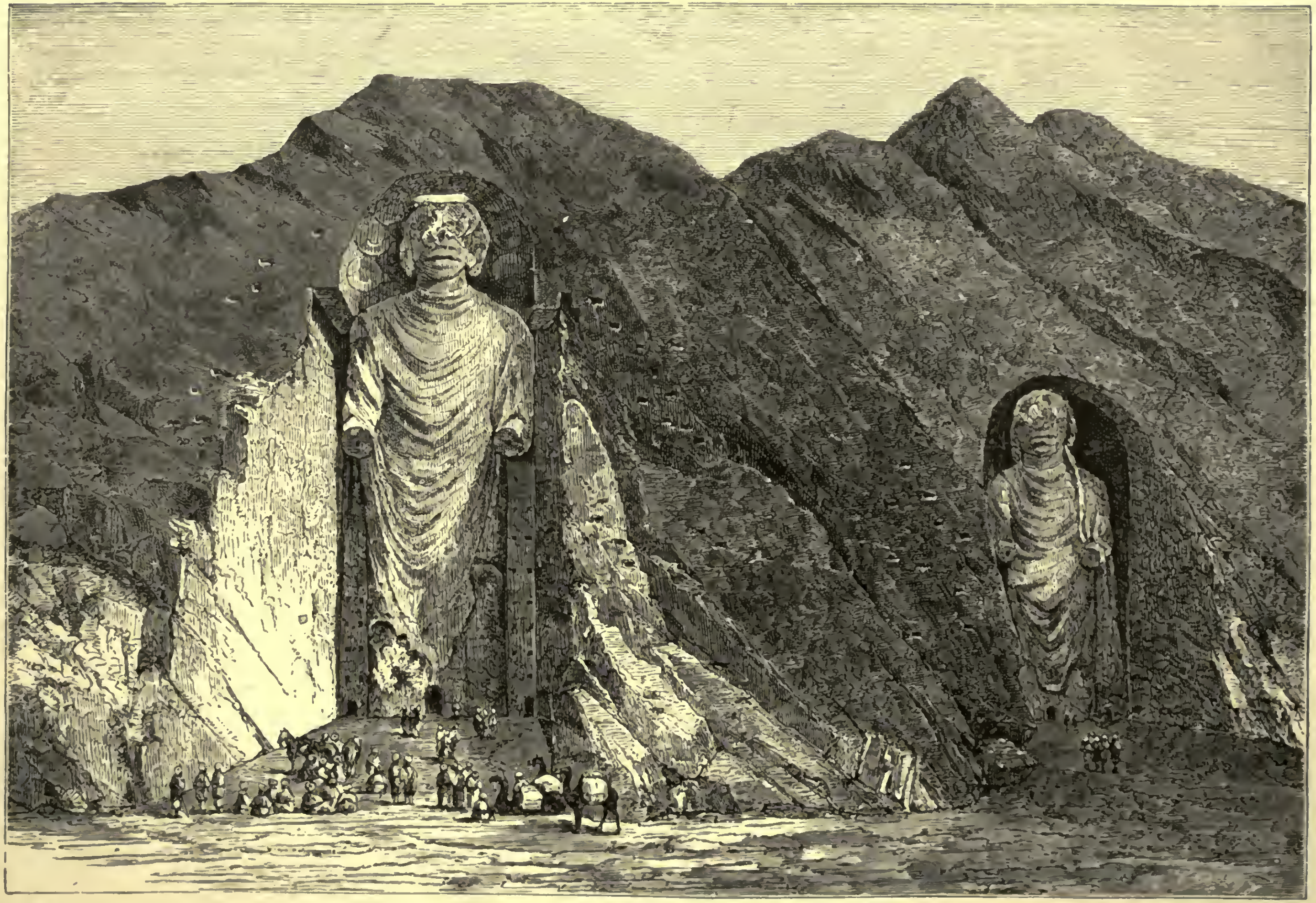
West of Badakshan, the region comprised between the Oxus and the continuation of the Hindu-Kush depends also on Afghanistan politically, but a sharp contrast still exists between the populations of both slopes. The comparatively easy passes connecting the Oxus and Indus basins have at all times attracted divers races towards Baktriana. Through this route the Aryan invaders passed in prehistoric times towards India. Alexander also crossed the Paropamisus, or Indian Caucasus, to annex Sogdiana to his empire. The Mongols and kindred races followed the same road from the north, and in subsequent times retraced their steps through these passes from the south. Here the Afghan Iranians have retained the predominance; but in the north the Uzbeg Tatars have acquired the political supremacy, and in all the provinces west of Badakshan they now form the most numerous element. Lastly, most of the passes, including that of Bamian, the most important of all, are guarded by the Hazarahs, Shiah tribes of Mongol stock, but, since the sixteenth century, of Persian speech.

Fig. 132.—Ruins of Balkh and Mazar-i-sherîf.
Scale 1 : 1,300,000.



24 Miles.

The Surgh-ab river of Kunduz, known as the Ak-serai, in its lower course receives its first waters from the Koh-i-baba, or "Father of the Mountains." One of its head-streams rises at the Haji-kak Pass, not the lowest, but the easiest of the "Indian Caucasus," and open seven months in the year. East of this pass, which is better known as the "Gate of Bamian," the Surgh-ab skirts the northern foot of the Hindu-Kush, and here the valleys of several of its tributaries also lead to passes over the main range. From the comparatively low Kaûak Pass the Indar-ab flows west to the Surgh-ab, and in a distance of about 130 miles between the Kaûak and Haji-kak Passes, Markham enumerates sixteen others over the Hindu-Kush. Seen from the depression in which the Indar-ab and Surgh-ab approach each other, the range appears in all its majesty, from its dark base to its snowy peaks. The crest has an elevation of 20,000 feet, but with depressions of 6,600 and even



COLOSSAL IDOLS, UPPER BAMIAN VALLEY.

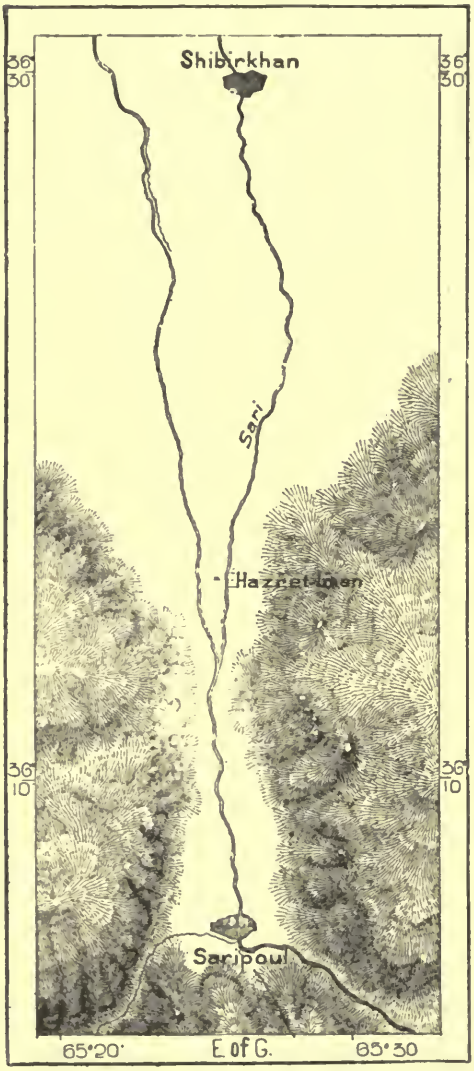
8,300 feet interrupting the snow-line, which here runs with remarkable uniformity at an altitude of about 15,000 feet.

Through the Haji-kak and Irak Passes the town of Bamian communicates with the Helmand basin as well as with the Kabul highlands, while through the Chibr Pass it enjoys direct communication with the Gosband valley, forming part of the Indus basin. Bamian thus commands a great part of Afghanistan, and its strategic importance was at all times understood, as shown by the ruins of fortifications belonging to different epochs, and succeeding each other on the cliffs and along the defiles of the valley. This town is supposed to have been the ancient Paro-Yami, while some, with Carl Ritter, identify it with the *Alexandria ad Caucasum*, founded by the Macedonian conqueror. It acquired special importance in the religious history of the Eastern nations. Amongst the ruins left by the Mongols after the destruction of the place in 1220 are numerous traces apparently of temples, as well as of *stupas*, as those religious monuments in the form of towers are called, which are found in so many regions visited by the Buddhist missionaries. The place itself has been named But-Bamian, or Bamian "of the Idols," from two rudely carved human figures representing the divinity, Silsal (Sersal) and Shamama. These rock figures, known also as the Red and White Idols, stand at a conspicuous point on the great highway of trade, migration, and conquest, and are so large that the caravans find accommodation in the openings let into the skirts of their robes. According to Burns they are 120 and 70 feet high respectively. The Hindus raise their hands in passing them, but others pelt them with stones, and the lower portions have been partly demolished by cannon balls. Most of the paintings decorating the figures have disappeared, but the nimbus round their heads still remains. They are pierced within with stairs and recesses, and the adjoining rocks are also perforated in every direction. A whole people could put up in these "twelve thousand" galleries, which occupy the slopes of the valley for a distance of about 8 miles. Isolated bluffs are pierced with so many chambers that they look like beehives. Notwithstanding the pilfering going on for generations, coins, rings, and other gold and silver objects are still found here. Some cuneiform inscriptions have been discovered on the rocks, but most of the coins and medals, dating from the Mussulman period, bear Kufic legends. No traces have yet been met with of the recumbent statue of Buddha, 1,000 feet long, seen here by the Chinese Hwen-T'sang in the seventh century.

Although belonging geographically to Turkestan, Bamian is nevertheless usually included in Afghanistan proper. It lies on the Surgh-ab, over 3,000 feet below the Haji-kak Pass, which is itself 12,385 feet above sea-level. The Ak-robat, or "White Caravanserai" Pass, immediately north of the town, and the Kara-kotal, or "Black Pass," in the Kara-koh, or "Black Mountains," are both over 10,000 feet, yet accessible to waggons and even to artillery. Between the two runs a small but difficult ridge known as the Dandan-shikan, or "Teeth-breaker." North of the Kara-kotal the road following the Khulm River traverses some formidable defiles, interrupted by pleasant valleys, the rocks skirting one of which are crowned with ruined forts showing the strategical importance formerly

attached to this point. Altogether these northern slopes of the Indian Caucasus are more inviting and verdant than the rugged heights of Afghanistan. But the marshy plains at their feet, especially the low-lying Kunduz, or Ak-serai valley, are amongst the most unhealthy in Central Asia. "If you want to die go to the Kunduz," says the Badakshan proverb, and of 100,000 Badakshani forcibly removed hither by Murad Beg in 1830, all but 6,000 are said to have perished within eight years.

Fig. 133.—Sariful and Shibirkhan Valley.
Scale 1 : 400,000.



6 Miles.

The town of Kunduz itself, although capital of a state, even in the time of Murad Beg consisted merely of a few hundred mud houses, some reed huts, and Uzbeg tents scattered over gardens, wheat-fields, and swamps. Talikhan, lying farther east at the foot of the range between Kunduz and Badakshan, seems to have been a far more important place. It held out for seven months against Jenghis Khan, and Marco Polo describes it as a large city and a great corn, fruit, and salt mart. The salt mountains whence it drew its supplies lay to the east and south-east, especially near Ak-bulak in Badakshan. Here also is the Lattaband Pass, followed by the caravans proceeding from Kunduz to Badakshan and the Pamir. It commands a view of the Koh-i-ambar, a remarkably regular cone rising 2,660 feet above the plains, which according to the legend was brought from India, and which is consequently said to grow none but Indian plants. The lion haunts the plains stretching north of these hills, but he is met nowhere north of the Oxus.

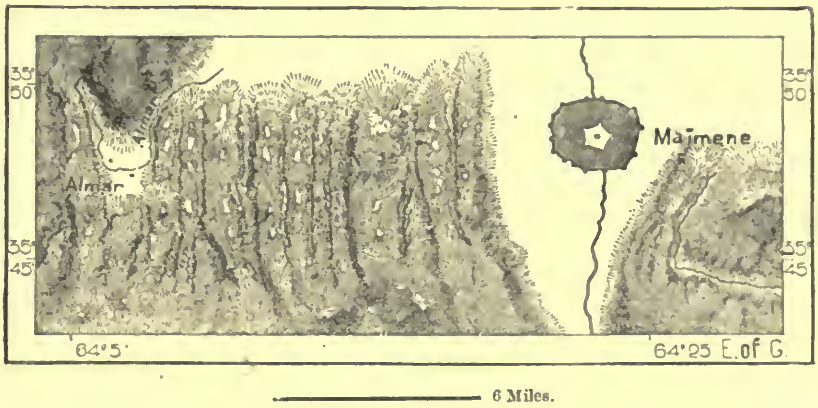
The population of Kunduz is estimated by the Russian officials at 400,000, or about 36 per square mile in a total area of some 11,000 square miles. Though not much for a country abounding in fertile and well-watered valleys, this is a vastly higher proportion than prevails in the Russian possessions, on which account this territory, so conveniently situated at the gates of the Hindu-Kush, naturally seems to the Muscovites the necessary

complement of their Turkestan domain. Travellers speak favourably especially of the Kunduz women, as excellent housewives, although held by the men in less consideration than their dogs.

Khulm, Balkh, Andkhoi.

Khulm, or Khulum, is not so large, but is relatively as densely peopled, as Kunduz, although not so well watered as that region. The Kunduz, or Ak-serai River, fed by the snows of the Hindu-Kush and the Koh-i-baba, is copious enough to reach the Oxus, whereas the Khulm River, flowing from advanced spurs of the Kara-koh, is absorbed by irrigation works on entering the plains. But the geographical position of Khulm, occupying the centre of the old Baktriana, is one of vital importance. Here converges the highway of Persia and India over the Bamian Pass, and here is the natural centre of the vast amphitheatre of highlands

Fig. 134.—The Maimene Valley.
Scale 1 : 370,000.



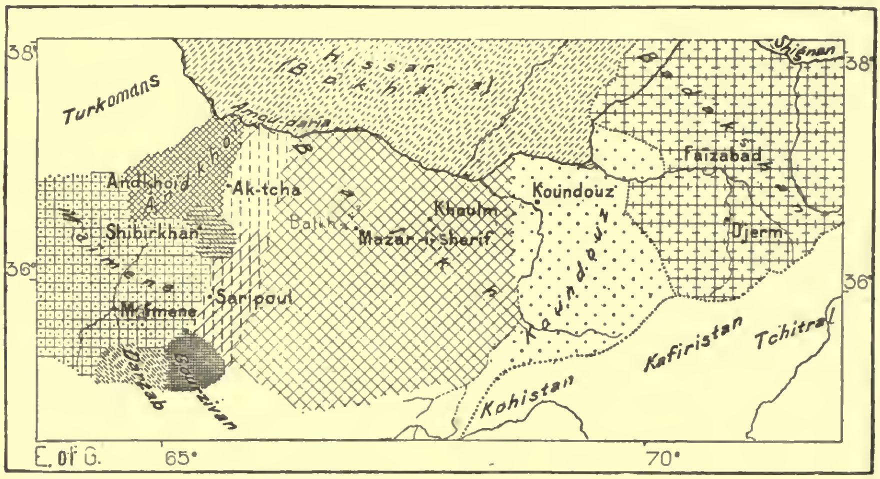
and plateaux stretching from Meshed in Persia to Bokhara. Balkh, "the Mother of Cities," was formerly the converging point of all the great commercial highways of this region. But after its destruction by Jenghis Khan in 1220 it ceased to be the centre of traffic, and before the middle of the present century Khulm was the most important place in Baktriana. Its Tajik population of 10,000 had a large trade in skins of dogs, cats, foxes, and lambs. It is encircled by extensive gardens and orchards, and even the bed of the intermittent stream is periodically converted into a garden. The present town is a modern place lying about 5 miles from the ancient Khulm, now a heap of ruins.

Balkh, formerly so famous as an imperial capital and holy place, the city in which Zoroaster preached, later on a centre of Hellenic culture and of Buddhism, is now little more than a vast ruin. For a circuit of over 18 miles nothing is visible except heaps of bricks, enamelled tiles, and other débris. The marble temples seen by the pilgrim Hwen-T'sang in all their beauty, and whose ruins were admired by Marco Polo, have disappeared altogether. Even the few Uzbeg

encampments and Tajik hamlets scattered over the plain were completely abandoned after the visitation of cholera in 1872, and "when Balkh shall rise from its ruins," say the natives, "the world will soon end." Since 1858 Takht-i-pul, some 12 miles farther east, has been the political centre of Afghan Turkestan. But the urban population, according to Grodekov amounting in 1878 to 25,000, has removed to the neighbouring sanctuary of Mazar-i-sherîf ("Tomb of the Sherif"), famous even beyond the Hindu-Kush for the ceaseless miracles here wrought at the shrine of the prophet Ali. Mazar-i-sherîf, whose four blue minarets are visible in the distance, lies still within the limits of the region watered by the Balkh, or Dehas River, whose farthest head-streams rise in the Koh-i-baba and Sufid-koh. In the lowlands this stream, though still rapid, becomes a mere embanked canal, the Bend-i-barbari, or "Dyke of the Barbarians," which, after a

Fig. 135.—Khanates of Afghan Turkestan West of the Oxus.

Scale 1 : 1,780,000.



120 Miles.

course of over 180 miles, runs dry in the gardens of Sujagird, north of Balkh. Whether Sujagird was a suburb of Balkh or an independent city, its ruins still cover a vast space, some 8 miles long, north and south on the road to the Oxus.

Farther west other streams also flowing through Afghan territory fail to reach the Oxus, though their waters serve to clothe with verdure the oases around the towns of Ak-cha, Saripul, Shibirkhan, and Andkhoi, peopled by Iranians, Turkomans, and Uzbegs. Thanks to the abundance of its waters, the most flourishing of these places is said to be Shibirkhan, whose melons Marco Polo described as the finest in the world. When Ferrier visited it in 1845 it had a population of 12,000. Saripul had 3,000 in 1818, but being pent up by the hills in a cirque subject to malaria, it is a very unhealthy place. The only trees flourishing in the Saripul and Shibirkhan valley are the saksaûl and the tamarind, though a few plants have been recently brought from Bokhara.

Next to Mazar-i-sherif the most populous town in Afghan Turkestan is Andkhoi, which, according to Vambéry, had 15,000 inhabitants in 1863. But most of them were living in tents amid the ruins of a city encompassed by the desert. The Maimene, a stream flowing through its gardens, has very little water in its bed, and this is so brackish that strangers cannot drink it. "Salt water, burning sands, venomous flies and scorpions, such is Andkhoi, and such is hell," says a Persian poet quoted by Vambery. Yet its horses, whose genealogy the natives trace back to the steed of the Persian Hercules, Rustem, are renowned throughout Tatary, as is also the so-called *ner* or *nar* breed of dromedaries, distinguished for their flowing manes, elegant forms, and great strength. Andkhoi also formerly sent to Persia those black lambskins known in Europe as "Astrakhans," but since the destruction of the place by the Afghans in 1840 its trade in these articles has not revived.

Maimene, lying amongst the hills, is watered by the same river Nari, which nearly runs dry in the gardens of Andkhoi. Its brave Uzbeg inhabitants long maintained their independence amidst the rival claims of Persia, Bokhara, and Afghanistan, but they are now tributary to Kabul, though soon probably destined to become an advanced outpost of the northern colossus at the threshold of the Iranian plateau. Here Maimene occupies an important strategical position, and according to Rawlinson, if Herat is the key to India, Maimene is the key to Herat. On the other hand, Grodekov asserts from personal knowledge that the route from Maimene to Herat is too difficult for military purposes. But however this be, Maimene is the chief trading station between Herat and Bokhara, and commands several mountain passes, so that its possession would be a great prize in the hands of either of the rival powers contending for the mastery in Asia. In 1863 Vambéry gave it a population of from 15,000 to 18,000, which more recent, but probably exaggerated, Russian estimates raised to 60,000. But in 1874 it was besieged by an Afghan army of 10,000 and twenty guns, which had already taken Saripul and Shibirkhan. The siege lasted six months, ending in the slaughter of 18,000 of its inhabitants, since when Maimene has remained a decayed village exposed to Turkoman raids. The population of the whole khanate, estimated by Vambéry at 300,000, is reduced by the Russian officers to 100,000. A brisk trade in horses, carpets, dried fruits, chiefly in the hands of the Jews, is carried on at the Maimene fairs.

All the khanates between the Indian Caucasus and the Oxus are at present subject to Afghanistan, except that of Andkhoi, which is still semi-independent. The geographical divisions have remained unaltered, and the village of Gurzivan and the small centres of the population in the Darzab valley, in the mountains south and south-west of Saripul, have preserved the title of khanate, though they have lost their autonomy. The Uzbeg natives are not required to render military service, their Afghan masters fearing they might use their arms to recover their independence. But the weight of taxation falls all the more heavily on them. According to Grodekov they are impatiently awaiting the arrival of the Russians; but they do nothing for their own freedom, and can scarcely defend themselves from the Turkoman marauders. Thus have a hundred years of oppression broken the spirit of these Tûrki peoples, formerly so renowned for their bravery.

II.—MERV—THE SOUTHERN TURKOMANS.

"Independent Tatary," which till recently covered such a wide area, is now reduced to a single narrow oasis encompassed by the sands, and already menaced on three sides by the Russian arms. One famous spot alone still lies beyond the Afghan frontier, or the territory directly or indirectly subject to Russia. This is the ancient Merv of the Persians, the Maûr of the Uzbegs, which occupies a strategic position of some importance, which disputes with Balkh the title of "Mother of the Cities of Asia," and which formerly called itself "King of the Universe" (*Shah-i-Jehan*). In the neighbourhood are still to be seen the ruins of Antiochia Margiana, or Merv-i-mukan, as it is now called, the ancient Hellenic city founded by Antiochus Soter. During the Arab ascendancy Merv, like Samarkand and Bokhara, became a great centre of learning, and the famous historian Yakut studied in its libraries. But the place fell a prey to the ruthless Mongols under Jenghis Khan, and its inhabitants, to the number, it is said, of 700,000, were led out of the city, told off in batches like beasts for the shambles, and all slaughtered in cold blood. Yet Merv revived from this fearful disaster, and was again a populous place in 1795, when Murad, Emir of Bokhara, destroyed the embankment retaining the waters of the Murgh-ab in an artificial lake, ruined the town and its gardens, and restored a great part of the country to the desert. Some 40,000 of the people, chiefly silk-weavers and other artisans, were removed to Bokhara, where their descendants still occupy a separate quarter. Merv passed subsequently into the hands of the Khan of Khiva, but since 1834 it has been held by the Tekke Turkomans, and its normal population now consists of 2,000 or 3,000 Uzbegs, while the Tekkes, Sariks, and Salors have camping grounds in the neighbourhood. It is the chief rallying-point of the Turkoman nomads, who, according to Petrusevich, have 50,000 tents in the Merv oasis. But the views hitherto entertained regarding its great strategical importance have been considerably modified since the advance of the Russians along the northern face of the Attok. Mr. Donovan, correspondent of the *Daily News*, imprisoned here for some weeks during the summer of 1881, also found that Merv still remains the assemblage of wretched mud huts described by Conolly in 1840. The opinion is now generally held that in their advance on Herat the Russians can safely leave Merv on the left until it suits their convenience to occupy it, meantime availing themselves of the easier and more direct route along the valley of the river T'ejend. The oasis of cultivated land, which Strabo tells us was surrounded by Antiochus with a wall 186 miles in circumference, stretches 75 miles north and south, with a mean width of 7 miles. Its fertility is famous throughout the East, and is maintained by 2,000 Turkoman labourers, who attend throughout the year to the irrigation works.

Great changes have taken place in the Merv country since the people have become more independent of the Khivan and Bokhara rulers. The reputation they formerly enjoyed amongst their neighbours is reflected in the local proverb, "If you meet a viper and a Mervi, kill the Mervi first, and then crush the viper."

Fearing to extend their forays to the Oxus, now held by the Russians, and compelled to come to terms with the Persians, Daman-i-koh Kurds, and Afghans, the Merv people have mostly relinquished their marauding habits; pillage and murder are no longer held in honour as formerly; and some moralising preachers have already ventured to broach the doctrine that there is no glory in slaughtering one's neighbours. Houses have been built in the oasis, irrigating rills have been dug, and the zone of culture extended. Fruit trees are being brought by the caravans from Bokhara, trade has been somewhat revived, and dealers from Meshed and Bokhara are now settled in the district.

Fig. 136.—Merv and Sarakhs Oases.
Scale 1 : 810,000.

30 Miles.

Between Merv and Meshed the Tekkes and their allies, the Salors, press hard upon the Persian stronghold of Sarakhs (Sharaks), situated in an oasis watered by the Heri-rud, or Tenjen, the river of Herat. Like Merv and Maimene, this is one of the strategical points which, in the hands of a military power, may have the most vital consequences for the peoples of the Iranian plateau. The Jews of Meshed, trading with the neighbouring Turkomans, have here erected a few mud houses; but till recently the only dwellings were the so-called *kirghas*, wood or reed huts covered with felt. The surrounding oasis is no less productive than that of Merv, and the two places dispute the honour of having given birth to the first husbandman.

West of Sarakhs, for a stretch of over 360 miles, the Turkomans have no towns properly so called. But some of their camping grounds on the banks of the streams

are encircled by defensive walls, often enclosing thousands of kibitkas. Eight villages of Eshabad have each a population of about 2,000, and before its capture by the Russians in 1881 Geok-tepe had some 15,000 inhabitants. Of the old Parthian towns nothing now remains, or at least their ruins have not yet been discovered. The city of Nissa, containing the tombs of the Parthian kings, is said to have stood at the issue of a valley at the foot of the Daman-i-koh. It may perhaps be the present Nias, lying east of the Turkoman fortress of Kizil-arvat, or rather Kizil-robat—that is, the "Red Caravanserai"—in a district recently visited by Baker and Gill.

Since the fall of Geok-tepe all the Turkoman tribes of this region have practically accepted Russian sovereignty. The limits of the Trans-Caspian territory have been extended eastwards to Askabad, and every effort is being made to complete the line of railway from the Caspian to Bami, the new capital of this province. In virtue of an imperial ukase issued in May, 1881, all the Akhal Tekke country is now incorporated in the Trans-Caspian territory, which is itself placed under the supreme administration of the Commander-in-Chief of the Caucasus. It is also stated that in a short time Russia will accept the Protectorate of the Merv Turkomans, a delegate from whom visited St. Petersburg in the spring of the year 1881. It is obvious that the time is rapidly approaching when the whole of the Turkoman domain will form an integral part of the Russian Empire, whose southern limits will then stretch nearly in a straight line along the northern frontiers of Persia and Afghanistan from the south-east end of the Caspian to the neighbourhood of the Hindu-Kush.

III.—BOKHARA.

Still nominally independent, this state is one of those which must henceforth conform their policy to the will of the Czar. Without being obliged to keep garrisons in its fortresses or to pay the salaries of civil administrators, Russia nevertheless holds the routes leading through Bokhara to the Hindu-Kush. Hence, in advancing upon Merv or Herat, her armies can now draw their supplies as well from the Bokhara oasis as from the shores of the Caspian. On the other hand, the Bokhara Government, protected by its powerful lord paramount, has no longer aught to fear from Turkoman or Afghan, and whole provinces have even been made over to it by a stroke of the pen. Thus by the will of Russia several states of the Upper Oxus —Shignan, Roshan, Darvaz, Karateghin—formerly depending partly on Kunduz or Badakshan, are now incorporated in Bokhara, and the Russians have thus become the masters of the Pamir passes. Within its new limits Bokhara occupies a space about half the size of France, with a population of over 2,000,000.* It lies nearly altogether on the right bank of the Oxus, whence its old name of Transoxiana, or Maverannahr, a word having precisely the same meaning. The term Sogdiana is properly limited to the valley of the Sogd, or present Zarafshan, henceforth shared by the Russian and Bokhara Governments between them.

The upland regions of the Bokhara Pamir, traversed by the Panja, Murgh-ab, and Surgh-ab, are nearly uninhabitable, or visited only in summer by the Kirghiz

* Area of Bokhara, 95,600 square miles; probable population, 2,130,000.

nomads. In the centre of the Pamir there are no villages above Tash-kurgan, and the Murgh-ab (Ak-tu) may be followed for over 120 miles to the snow-line and the Ak-tash Mountain without meeting a single hamlet.

Below the Ishkashim bend in Badakshan the Panja, or Sarhad, continues to flow northwards to the Murgh-ab and other streams of the Western Pamir, whose junction forms the Amu-daria. In this part of the Oxus basin are the three petty states of Shignan, Roshan, and Darvaz, which since mediæval times have been visited by no European travellers. Yet the communications between Badakshan and the Upper Oxus valleys are frequent, and in 1875 Captain Trotter was able to send his native assistant, Abdul Subhan, to explore the course of the Panja for a distance of 96 miles below the Ishkashim bend to Wamur, capital of Roshan. On the other hand, the Hindu explorer, Subadar Shah, ascended the Oxus in 1874 from Western Badakshan to the Roshan frontier, leaving but a small and unimportant gap between the two itineraries.

Shignan and Roshan.

Shignan (Shugnan, Shugdan) and Roshan, no part of which is probably lower than 6,500 feet above the sea-level, have received from the lowlands the name of Zuchan—that is, "Land of Two Lives"—as if the pure air and water of this region insured to its inhabitants twice the average term of life. But there are few to enjoy this excellent climate. According to Wood there were in 1838 only 300 families in Shignan and 1,000 in Roshan, all Iranians; but in 1873 the population increased altogether to 4,700 families, or about 25,000 souls. As in Wakhan, the slave trade was the cause of the depletion of the land. In 1869 the prince still trafficked in his own subjects, an adult man or woman being valued at from £12 to £18, which was equivalent to 10 to 15 bulls, 5 to 8 yaks, or 2 Kirghiz muskets.

At the time of Forsyth's visit the two states had only one emir, residing at Wamur (Vamar), capital of Roshan. Kila-bar-panja, on the left bank of the river, consists of 1,500 houses. Wamur, like most of the other villages, stands on the right bank with a western aspect, which is here brighter and warmer than that facing eastwards.

Darvaz and Karateghin.

Darvaz, bordering on Roshan below the junction of the Panja and Murgh-ab, is also peopled by Tajiks, speaking Persian and preserving many Mazdean traditions, although now Sunnite Mussulmans. In Darvaz the Oxus begins to trend westwards, and on its more sheltered banks the cultivated plants of the temperate zone, and even cotton, begin to appear. Nib-kumb, Kila-kumb, or Kaleh-i-kumb, the capital, is sometimes known as the "Prison of Iskander," having been traditionally built by Alexander of Macedon to confine the rebels. A garrison of 5,000 Bokhariots occupies Darvaz, whose inhabitants energetically resisted the conquest.

Karateghin, separated from Ferghana by the Alaï-tagh range, is a romantic land of mountains, glaciers, waterfalls, traversed by the Kizil-su, or "Red River,"

Fig. 137.—Ak-tash Valley and Mountain.

which lower down is known successively as the Surgh-ab and Waksh (Yaksh, or Vakhsh). Here also the old Aryan population has held its ground, and the Galchas, although officially converted to Islam, have preserved their old customs

recalling those of Zoroastrian times, and continue to speak Persian. They are very industrious, engaged in weaving, metal-working, gold-washing, and rock-salt mining, while in summer they do a considerable trade with Kokan, Bokhara, and Kashgaria. But these pursuits are insufficient for the support of the people, all of whom being proprietors, and reluctant to divide the land indefinitely, many are obliged to emigrate to the lowlands. All the water-carriers of Tashkend are natives of Karateghin, and many schoolmasters in Turkestan are from the same place. Although the country has a mean elevation of 6,500 feet, Fedchenko estimates the population at upwards of 100,000, occupying over 400 kishlaks, generally surrounded by orchards. The prince, another "descendant of Alexander," resides in Garm (Harm), a cluster of 350 houses on the right bank of the Surgh-ab. In the neighbourhood is a copious hot spring of carbonated water.

Hissar—The Iron Gate.

The district of Hissar, lying west of Karateghin, was for the first time accurately surveyed by the Russians, Vishnevsky, Mayev, and Schwarz, in 1875. We now know that its eastern division is traversed by the Surgh-ab, or Waksh, flowing to the Oxus below Hazret-imam in Kunduz. West of this river the country is divided into parallel zones by the broad valleys of the Kafirnahan, Surkhan, and Shirabad-daria. Below Garm there are no towns except Kurgan-tube on the right bank of the river. But a little farther down are the ruins of Lakman, which seems to have been formerly a considerable place, and where are the remains of a bridge across the Waksh. Opposite the junction of this river with the Oxus stood Takhta-kuvat, associated with many local legends. Lastly, near the Patta-hissar Pass, on the caravan route from Bokhara to Mazar-i-sherîf, are the ruins of Termez, which stretched for 15 miles along the Oxus between the river Sarkhan and the ruins of Muja, another city abandoned in recent times, but still overlooked by a tall minaret. Termez was formerly known by the Tajik name of Gul-gala, the "Noisy," the noise of its bazaars having been heard at Baktra (Balkh), 54 miles off! In the ruins of these cities many gold and silver objects, especially Greek coins, have been discovered, nearly all of which find their way to India. Gold-washing is actively carried on along the banks of the Waksh.

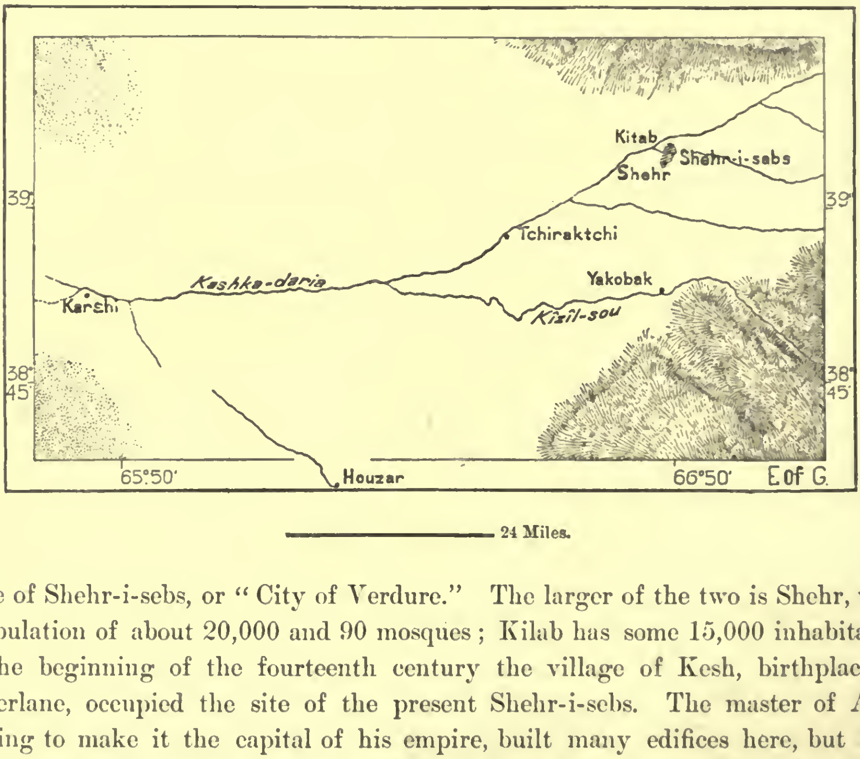
All the towns of Hissar—Faizabad, Kafirnahan, Dushambe, Hissar, Karatagh, Regar, Sari-chus, Yurchi, Denau, Baisun, Shirabad—stand on tributaries of the Oxus, and most of them near the region of snows and glaciers. The low-lying riverain tracts are here as unhealthy as on the Kunduz side, and to guard against the fevers and rheumatism caused by the sudden changes of temperature, the natives never lay aside their fur robes even in the height of summer. Hissar, which gives its name to the whole district, lies 96 miles north of the Oxus, in the upper valley of the Kafirnahan, and above the fever zone. Its inhabitants, estimated at 10,000, are chiefly engaged in the production of arms, knives, and hardware, exported by the pilgrims to Persia, Turkey, and Arabia. Some of the damascened blades with chased gold or silver hilts are of exquisite workmanship, and unequalled even in Europe for the temper of the steel.

The original Aryan population of Hissar has been mostly displaced by intruders of Tûrki stock. The Galchas are still found in some upland villages, and Faizabad, Kafirnahan, and a few more towns are peopled by Tajiks; but elsewhere the Uzbegs and Sartes form the chief element. Hence, in Bokhara, Hissar is called Uzbekistan.

West of the Hissar Mountains several broad valleys running in the direction of the Oxus are watered by streams whose junction forms the Kashka. Here have been founded some states which have often played an important part in history. Shehr-i-sebs (Shakh-i-sabz), on a torrent flowing from Mount Hazret-i-Sultan at the southern issue of a pass over the Samarkand-tau Mountains, is one of those capitals which for a time acquired great influence in Turkestan. It consists in reality of two fortified towns, Kilab above, and Shehr below, formerly enclosed by one wall, but separated by extensive intervening gardens, whence their common

Fig. 138.—Shehr-i-sebs and Karshi.

Scale 1 : 1,200,000.



24 Miles.

name of Shehr-i-sebs, or "City of Verdure." The larger of the two is Shehr, with a population of about 20,000 and 90 mosques; Kilab has some 15,000 inhabitants. In the beginning of the fourteenth century the village of Kesh, birthplace of Tamerlane, occupied the site of the present Shehr-i-sebs. The master of Asia, wishing to make it the capital of his empire, built many edifices here, but soon recognised the superior advantages of Samarkand, to which he transferred his residence. Of his palace, the Ak-serai, or "White Castle," one of the "seven wonders of the world," nothing now remains except some towers and the huge brick pillars flanking the main entrance. Their walls are still lined with white and blue porcelain slabs, embellished with arabesques and Persian and Arabic inscriptions. Tradition points to one of these towers as that from which forty courtiers sprang spontaneously after a paper which a gust of wind had blown from the hands of their dread sovereign.

THE IRON GATE DEFILE ON THE KARSHI-DERBENT ROUTE.

The population of this district consists chiefly of Kenegez, Sunnite Uzbegs, as famous for their valour and endurance as the women are for their beauty. It required a Russian expedition to reduce Shehr-i-sebs in 1840, and its inhabitants have never tolerated slavery in their midst. Its gardens, watered by the Kashka, produce excellent fruits, and its annexation has been of great advantage to Bokhara, for the valley yields cereals, tobacco, cotton, hemp, fruits, and vegetables in abundance, while the hills are rich in minerals. The salt mines of Hazar, south-west of Shehr-i-sebs, supply all the demands of Samarkand, and Hazar is also a large market for cattle and farm produce.

One of the southern branches of the Kashka rises in a highland district formerly famous for containing one of the "wonders of the world." This is a defile 40 to 65 feet broad, and nearly 2 miles long, traversed by the route leading from Balkh to Samarkand by the Shirabad River, Shehr-i-sebs, and the Samarkand-tau range. When visited by the pilgrim Hwen-T'sang this defile was closed by folding gates, strengthened with bolts and adorned with belfries. Eight centuries afterwards Clavijo, Spanish envoy to the court of Tamerlane, also passed through the "Iron Gate," but the artificial structure had disappeared, and the place is now called Buzgola-khana, or the "Goat Hut." But the nearest town retains the significant name of Derbent, like that of the Caspian "Gate."

Topography—Bokhara.

The important town of Karshi lies in a vast plain near the junction of the two main branches of the Kashka, which receives all the waters of the hills between Shehr-i-sebs and Derbent. The walls of Karshi have a circuit of over 5 miles, with a population of 25,000. It produces excellent arms and knives, exported to Persia and Arabia, besides elegant ewers, and copper dishes artistically chased and embellished with incrustations of silver; but its chief resource is derived from the surrounding oasis, in which tobacco especially is grown. The river is skirted by a fine promenade lined with the silver poplar, and the natives are renowned for their good taste, wit, and intelligence.

Karshi lies at the converging point of the routes from Bokhara, Samarkand, Hissar, Balkh, and Maimene, within 60 miles of the Oxus, but separated from it by the sands in which the Kashka runs dry. Where crossed by the route to Andkhoi and Maimene, the river is guarded by the fortified town of Kilif. Here the Oxus, confined on one side by rocks, is only 1,200 feet broad, but is said at some points to be 250 and even 330 feet deep. Lower down another ferry is defended by Karikji Fort on the right, and Kerki on the left bank. All the middle course from Baktriana to Khiva has been assigned by Russia to Bokhara, this state being required to maintain the ferries and keep in good repair the caravanserais on both sides. The population on the left bank consists chiefly of Ersari Turkomans tributary to the emir, and in return protected by him from the other nomads. After Kerki the only fortified place possessed by Bokhara on the west bank is Charjui, on the direct route between the capital and Merv, and facing the

former junction of the Zarafshan. Charjui has become the entrepôt of trade between Bokhara and Khiva.

By seizing Samarkand and the upper and middle valley of the Zarafshan, Russia has placed at her mercy the city of Bokhara and all the other towns on the lower course of the river. The construction of an embankment to retain the waters of the Zarafshan in a large reservoir would suffice to dry up all the arable lands of Bokhara proper, and compel the inhabitants to emigrate. The extension of tillage in the Samarkand district has analogous consequences, a larger quantity of water being needed for the works of irrigation. Hence, since the Russian occupation of Samarkand, Bokhara has suffered from a steadily diminishing supply, resulting in a gradual migration of the people up stream. Thus, apart from her immeasurably superior military strength, the mere possession of Samarkand insures for Russia the absolute control of Bokhara.

Bokhara, "the Noble" (Sherîf), as it is called on the coins struck by the emir, is not one of the fine cities of the East; nor is it even one of the old cities of Sogdiana, although traditionally supposed to have been founded by Alexander. Its narrow, winding, and now nearly deserted streets, its dilapidated and grimy monuments, the sluggish waters of its canals often running dry altogether, its dreary and shadeless open spaces, do not recall the days when its emir was the mightiest ruler in Central Asia. The chief mosque is overlooked by a minaret 160 feet high, whence criminals were precipitated, and to which access was allowed only to the mollahs and executioners with their victims.

The bazaars of Bokhara still attract traders from every quarter. At least two-thirds of the population, reduced from 140,000 in 1830 to 70,000 in 1880, are Tajiks. Turkomans and Uzbegs, more or less mixed with Iranian elements, are also numerous, while the Kirghiz pitch their tents in the open spaces as if they were in the middle of the desert. Russians likewise, and other Europeans in their wake, begin to show themselves in the streets, and the bazaars are occupied by many Jews and Hindus, or "Multani," as they are here called, from the city of Multan, regarded in Turkestan as the metropolis of India.

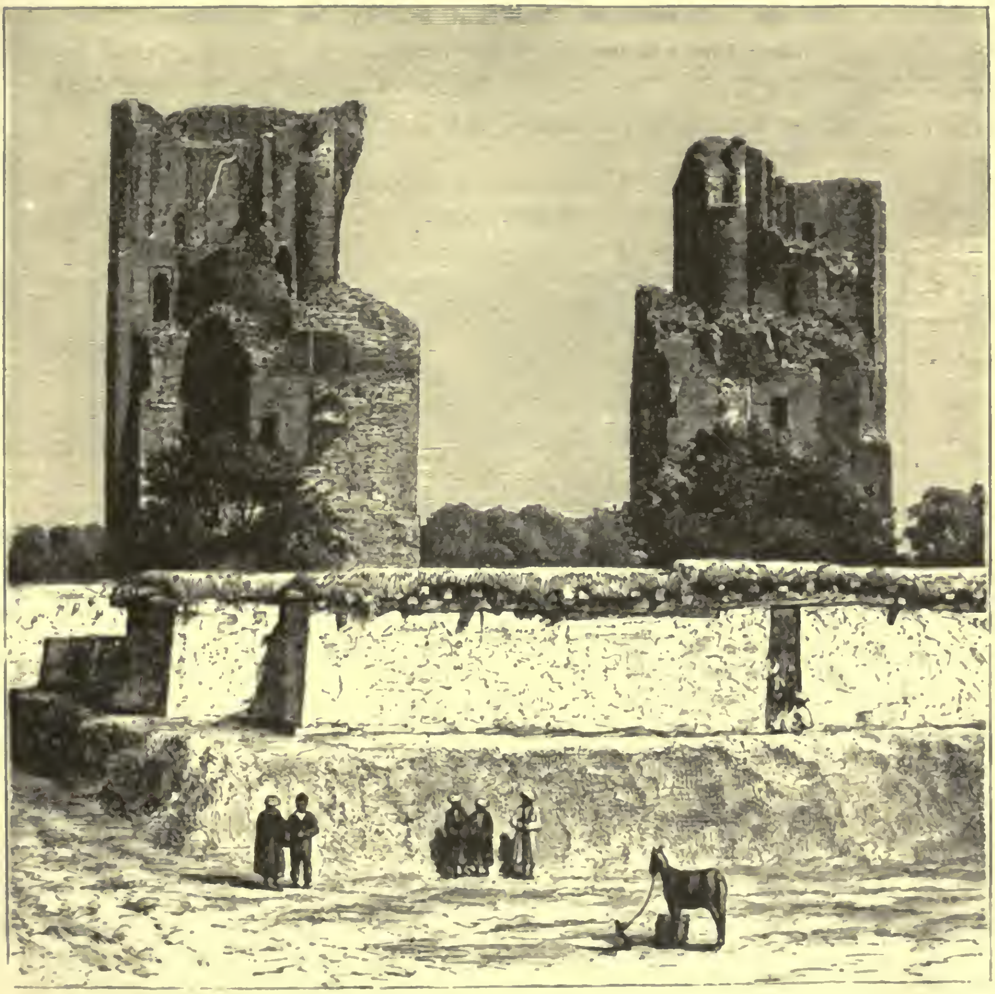
Bokhara is especially famous as a centre of learning. "Elsewhere the light descends from above; in Bokhara it radiates upwards," as Mohammed himself certified when translated to heaven. At any rate an intense love of letters was here developed at various epochs between the ninth and fourteenth centuries. As in Spain, the mingling of Aryan and Arab cultures had the happiest results for science, and the Iranians of Bokhara converted to Islam, and more or less assimilated to the Arabs, became the poets, doctors, and shining lights of Transoxiana. Bokhara, the "City of Temples," as the name means in Mongolian, is still a city of schools, containing, besides 360 mosques, over 100 *medresseh*, or colleges, where the pupils learn to read the Koran. But traditional methods and mere routine have killed science, and little now is taught beyond empty formulas. The fervid faith of this "Rome of Islam" has itself degenerated to a system of shams, veiling corruption and hollowness beneath the outward forms of worship. The decrees of the priesthood are faithfully observed; the people always wear their winding-

BOKHARA—ASSEMBLY IN FRONT OF THE MOSQUE.

sheet as a turban round the head; they con the prescribed prayers, regularly visit the shrine of Baha-eddin, the national saint of Turkestan. But meantime friendship is poisoned by treason, espionage has become the chief instrument of government, and vice in every form is installed at the gates of the mosques.

Although far less flourishing than formerly, the industry of Bokhara is still considerable, and the bazaars are stocked with many objects of local produce. Here are fabricated the beautiful striped cotton goods known by the name of *alaja*,

Fig. 139.—Bokhara: Ruins in the Interior of the City.

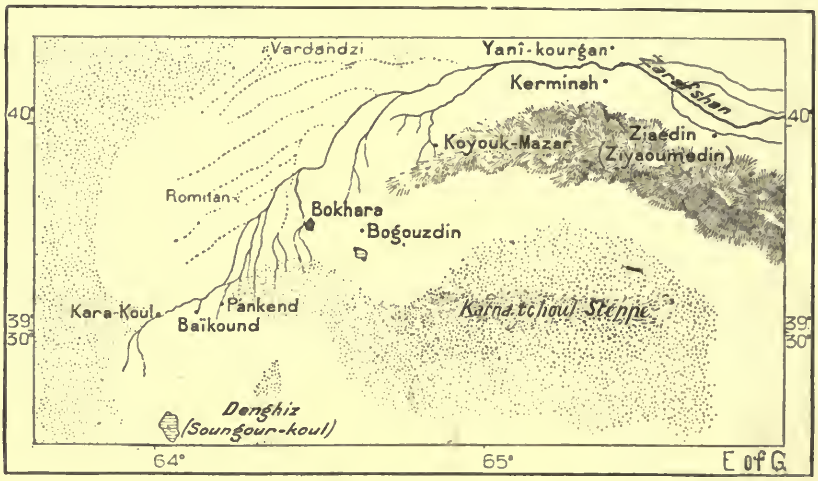


excellent leather for the native boots and slippers, silken tissues "delicate as the spider's web." Nor has the Russian occupation of Samarkand or the rising commercial importance of Tashkend yet deprived Bokhara of its extensive international trade. It still remains the great central mart between Nijni-Novgorod and Peshawar; India and Afghanistan send hither their drugs and dyes, tea, earthenware, books, and especially the so-called *kabuli*, or English wares. From Persia come other woven goods, arms, and books; from Merv, arms and valuable

horses; from Herat, fruits, wool, skins; while through Khiva most of the manufactured articles are forwarded to the Volga basin. Russian merchandise is naturally found in the greatest quantity in the Bokhara bazaars, purchased, however, by the native dealers in Moscow, Nijni-Novgorod, or Orenburg, and by them brought to the great mart of the Zarafshan. The whole of this important traffic, valued at nearly £6,000,000, is in the hands of the Bokhara, Afghan, Hindu, and Jewish traders. In 1876 there was only one Russian merchant in the place, and certain branches of commerce formerly monopolized by the Russians have now been appropriated by the natives.

Hence Bokhara is threatened with ruin not by the commercial rivalry of Samarkand or other towns occupied by the Russians, but by the gradual loss of water from the uplands. The shifting dunes are already yearly encroaching on the oasis, filling the irrigation canals, and slowly changing the country to a

Fig. 140.—Oasis of Bokhara.
Scale 1 : 2,000,000.



24 Miles.

desert. The destruction of the saksaûl forests resulted in changing the firmly bound hillocks into moving sands, driven by the winds to the conquest of the arable tracts. The canals formerly derived from the Sir have also long been abandoned, and the time when the whole oasis will be restored to the desert is merely a question of calculation. Quite recently the rich Vardandzi territory has been invaded; the Romitan district, west of Bokhara, was swallowed up in 1868, when 16,000 families are said to have been compelled to take refuge in Khiva. Tens of thousands have migrated in the same way to Samarkand and the Zarafshan valley. The city of Bokhara itself is seriously threatened, the people awaiting the catastrophe as an immutable dispensation of Allah, and unless the progress of the dunes can be arrested their ruin is really inevitable. Thus in former times have perished Khoju-oba, 24 miles north-west of Bokhara, and the famous Baïkund, 20 miles west of it. Bokhara suffers also from the bad

quality of its waters, and from its unhealthy climate. Ulcers of all kinds are very common, especially amongst the women, and in summer one-tenth or even one-fourth of the people are attacked by the *filaria medinensis*, a parasite bred in the flesh of the feet or arms, and which can scarcely be got rid of except by excision, a surgical operation skilfully performed by the local barbers.

Besides the capital several other towns have been founded in the Zarafshan valley, and especially in the Miankal district towards the Russian frontier. Here village succeeds village, and the whole country is a vast garden, still justifying the saying formerly applied to all the country between Tashkend and Khiva, that "a cat could pass along the roofs from town to town." The largest places

Fig. 141.—Khiva.
Scale 1 : 26,000.

in Miankal are Ziyaweddin, Yani-kurgan, and Kermineh, peopled chiefly by Uzbegs, who are here excellent agriculturists.

Below Bokhara the chief station on the route to Charjui is Kara-kul, or "Black Lake." During the floods the river reaches this point, where a basin still known as the Denghiz, or "Sea," receives the overflow, which evaporates without crossing the sands to the Oxus. In 1820, when the water must have been far more abundant than at present, Kara-kul is said to have had a population of 20,000, a number which would now inevitably perish of thirst in a district formerly irrigated by a network of canals from the Oxus, Zarafshan, and Sir.

The khanate of Bokhara still maintains its local administration and the outward forms of government. But the substance has vanished, the Emir, or "Head of the Faithful" and master of the lives of his subjects, having now to

reckon with one more powerful than himself—the Governor-General of Russian Turkestan. Even within his borders the Russian fort of St. George was erected in 1872 at Kala-ata, to guard the direct route between Tashkend and Khiva. Henceforth Christian strangers have to fear neither torture nor imprisonment, and even the much-abused Jews now find protection from extortion, while the slave markets are closed and the traffic in human flesh at least outwardly suppressed. The treaty of 1873 abolishing the slave trade also secured to the Russians the free navigation of the Oxus, and the right to construct quays and

Fig. 142.—A Minaret in Khiva.

depôts along its banks. All the towns of Bokhara were thrown open to Russian trade, the subjects of the Czar were authorised to exercise every industry on an equal footing with the natives, and were allowed to settle as landowners in the khanate. A Russian minister was also accredited to the emir's court, intrusted to watch over the execution of the treaty, while police regulations were framed to prevent any one from passing from Russian to Bokhara territory without the formal authorisation of the imperial Government. The police of Russia thus penetrates farther than her armies into the heart of the continent, and through

her vassal state she can now make herself felt on the Kashmir and Afghan frontiers. Of the commercial advantages secured to her by the treaty she has so far scarcely made any use.

The Bokhara army, now useless for military purposes, has become a sort of irregular police, composed of Sarte volunteers and Persian freedmen formerly sold by the Turkomans in the Bokhara market. The words of command, framed by the Cossack deserter Popov, who became commander-in-chief, are delivered in

Fig. 143.—Khiva: Exterior of a Mosque.

Russian, but mixed with some English and Tûrki terms, and the uniform of the troops is a distant imitation of that of the Indian sepoys.

IV.—KHIVA.

Khiva, like Bokhara, is also a vassal state; but owing to its geographical position much more directly dependent on Russia. The right bank of the Amu, which separates the khanate from the Russian possessions, is lined with forts and fortifications, whence the troops of the Czar might in four-and-twenty hours reduce the whole oasis. Although the official area of the country is stated to be 23,000 square miles, with a population of 700,000, most of the land is a desert, blending imperceptibly with the irrigated tracts. Where the canals stop the

last permanent villages cease, so that the whole settled population is, so to say, grouped under the guns of the Russian strongholds. It took the Muscovites over one hundred and fifty years to finally subdue a region defended on the south, west, and north-west by almost impassable wastes. On two occasions, in 1703 and 1740, the khans had declared themselves Russian subjects, but the treaties

Fig. 144.—Krasnovodsk Bay.

Scale 1 : 290,000.

had remained inoperative, and the people persisted in their hostility to the foreigner. In 1717 the Kabardian Prince Bekovich Cherkaskiy, sent by Peter the Great to give a body-guard to the khan, and thus prepare for Russian supremacy, made a first expedition against the country, which ended in a complete disaster. In 1839 the campaign conducted by Perovskiy, at the head of 20,000 men and a train of 10,000 camels, also ended in failure. But a decisive

KHIVA.

invasion took place in 1873, when columns of troops from the Caspian, Orenburg, the Sir, and Tashkend overran the country from all quarters simultaneously. Khiva was taken almost without a blow, and the only serious struggles were not with the inhabitants of the oasis, but with their temporary allies the Turkomans of the Caspian. Expeditions are still from time to time sent against them to protect the Lower Oxus districts from their forays.

Of all the cultivated regions in Turkestan, Khiva best deserves the encomiums of the Eastern poets. Everywhere water flows in abundance, bordered by poplars, elms, and other trees; the fields are encircled by avenues of mulberries; the white houses are like bowers buried in foliage and flowers; the nightingale, scarcely elsewhere known in Tatary, here warbles in every rose-bush. The land, yearly renewed by the alluvia of the river, is inexhaustibly fertile, producing magnificent fruits and vegetables. Its melons and pistachio nuts are renowned even in Pekin, and the Emperors formerly exacted a certain quantity of them from their Kashgarian tributaries. Compared with that of other Turkestan countries the population of Khiva is consequently very dense, and might be doubled, or even tripled, without overtaxing the resources of the land.

Khiva, capital of this ancient region of Kharezm, or Khovarezm, a term said to mean "Lowlands," is scarcely more than an aggregate of mud hovels, between which wind narrow lanes, muddy or dusty according to the seasons. It is enclosed by a low earth wall lined with pools of slimy water. In the centre another earthen wall, 26 to 30 feet high, surrounds the citadel, residence of the khan and principal functionaries. Here also are the chief mosques and schools, none of which are architecturally remarkable except the edifice containing the tomb of the Mussulman saint Polvan, or Pehlivan, patron of Khiva. The western quarter, laid out in gardens and shady terraces, is a much more pleasant resort. Here the avenues intermingle with the canals, and above the crenellated walls of the citadel the dunes and minarets stand out against a background of blue sky. In the other quarters there are more cemeteries than gardens, the abodes of the dead here mingling with those of the living.

Before the expedition of 1873 Khiva was one of the chief slave markets in Asia. Here the Turkomans sold their gangs of captives taken or purchased on the Caspian shores, and along the Persian, Herat, and Afghan borders. The most highly prized as labourers were the Russians; all belonged mostly to the khan and other dignitaries, and many often rose to the highest positions in the State. On the arrival of the Russian troops in 1873 they revolted in several places, and plundered their owners' houses. The latter appealed to the Czar's generals, and presently the bodies of rebel slaves were dangling from gibbets set up in the very centre of the slave market. The captives were slaughtered wholesale, and to prevent the survivors from escaping, the Khivans sliced off their calves or the soles of their feet, filling the sores with chopped horsehair. The Russian Governor-General, who had been hailed by these wretched creatures as their liberator, tardily resolved to justify their hopes. The abolition of slavery was proclaimed, and the emancipated captives, to the number of 37,000, set out to return to their homes.

But on the routes across the desert thousands fell victims to disease, exhaustion, and the Turkoman marauders.

At the time of the Russian occupation the population of the city of Khiva was estimated at 4,000 or 5,000 souls, chiefly half-caste Uzbegs and Iranians, besides Sartes and emancipated Persians, speaking the local Tûrki dialect. Most of the Khivans are of disagreeable and even harsh appearance, their features being generally marked by small-pox, cutaneous eruptions, ophthalmic affections, the abuse of opium or hashîsh. The children have a pleasant expression, but all vivacity disappears with age, and decrepitude soon sets in. Owing to the high

Fig. 145.—Cheleken Island and Michael Gulf.

Scale 1 : 810,000.

Persian caps worn all the year round, the ears of the men stand out from the head, a trait by which they may be recognised at a glance amongst the other inhabitants of Turkestan. The turban is worn only by the clergy.

The trade and industry of Khiva are unimportant. Some inferior silks and strong cottons are manufactured; but most of the woven and other goods are imported from Russia. In the bazaars may also be purchased some English cottons, and the green tea imported from India through Kabul and Bokhara. The chief merchants trading with Russia, Persia, and Afghanistan reside, not in Khiva itself, but in Urgenj, the largest city of the khanate, 24 miles north-west of the

capital, near the left bank of the river. Urgenj is surrounded by mud walls, and has a present population of 30,000. It was till recently known as Yani-urgenj, or "New Urgenj," to distinguish it from the Kunia-urgenj, or old town, destroyed by Tamerlane, and in the sixteenth century utterly ruined, when the Oxus receded farther east. The famous town of Kungrad, on the Taldik, is threatened by

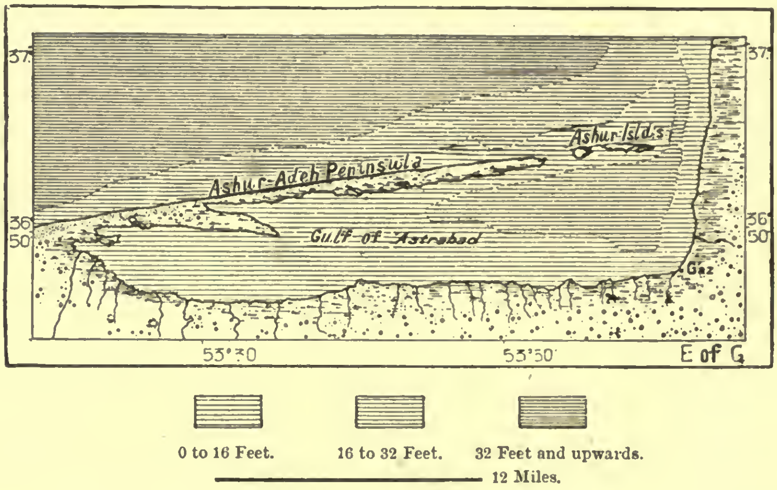
Fig. 146.—Hassan-kaleh Bay.

Scale 1 : 300,000.

a similar fate, since this branch has dwindled to a sluggish stream lost amidst the reeds. Khojeili, at the head of the delta proper, over against the fortress of Nukus, has, on the other hand, acquired some importance through its traffic with the surrounding nomads. It is said to be entirely peopled by Hajis, Mecca pilgrims, here called *Hoja*, or *Khoja*, whence its name.

The Khan of Khiva, like the Emir of Bokhara, is in theory master of the land and life of his subjects, and till recently he made terrible use of his power by the still remembered torture, "bug pits," sword, rope, and stake. But these horrors, on which custom had always imposed certain limits, are now at an end. The true master of the land is now the Russian resident, armed with the treaty of 1873, in which the khan declares himself "the humble servant of the Emperor of all the Russias." To the Czar's subjects he grants free trade in all his cities, besides the free navigation of the Oxus, engaging to supply sites for the Russian depôts, and to keep in good repair the artificial works executed by his conquerors along the course of the river. He recognises the prior claim of all Russian creditors, and constitutes himself a debtor to the St. Petersburg Government in the sum of

Fig. 147.—Ashur-Adeh.
Scale 1 : 770,000.



2,200,000 roubles, the last instalment of which will be paid off in 1893. If not, the whole khanate is pledged for the amount. Khiva is, in fact, a Russian province, though still ungarrisoned.

V.—RUSSIAN TURKESTAN.

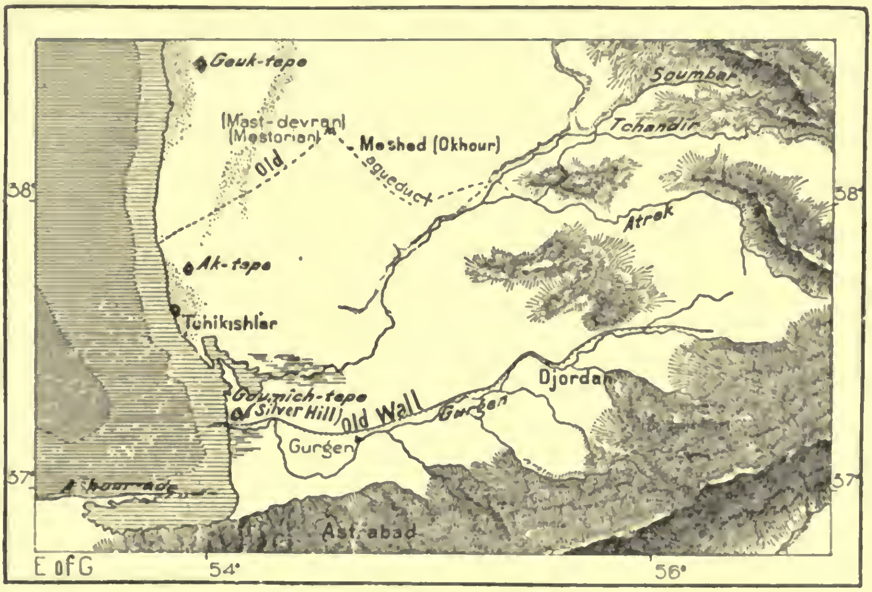
The portion of the Aralo-Caspian basin actually annexed to Russia is far more extensive, though relatively more scantily peopled, than the tributary or less independent states. Lying more to the north, it comprises less fertile tracts, while the regions towards which Slav colonisation is being attracted are the farthest removed from Russia proper. Steppes 900 miles broad separate these New Russias from the mother country, and the forts and postal stations connecting the colonies with the Ural and Volga basins very slowly grow into villages and towns.

Amongst the lands still lacking a sedentary population, the least inhabited is the vast province stretching from the Caspian to the Aral west and east, and from

the Ural to the Atrek river, north and south. This region, officially known as the "Trans-Caspian Division," depends on the government of Caucasia, and has hitherto been regarded as little more than a simple coast district over against Baku, whence troops and supplies are most easily forwarded. The only fixed establishments are a few fortresses and entrenched camps at the more accessible points on the coast, or the most convenient as centres of attack against the nomads of the interior. Some of the forts have already been abandoned, either for want of water, their unhealthy climate, or utter uselessness. Several fortified stations on the Manghishlak peninsula are now a mere heap of ruins; but the somewhat

Fig. 148.—Valleys of the Atrek and Gurgen.

Scale 1 : 2,965,000.



0 to 16 Feet. 16 to 32 Feet. 32 Feet and upwards.

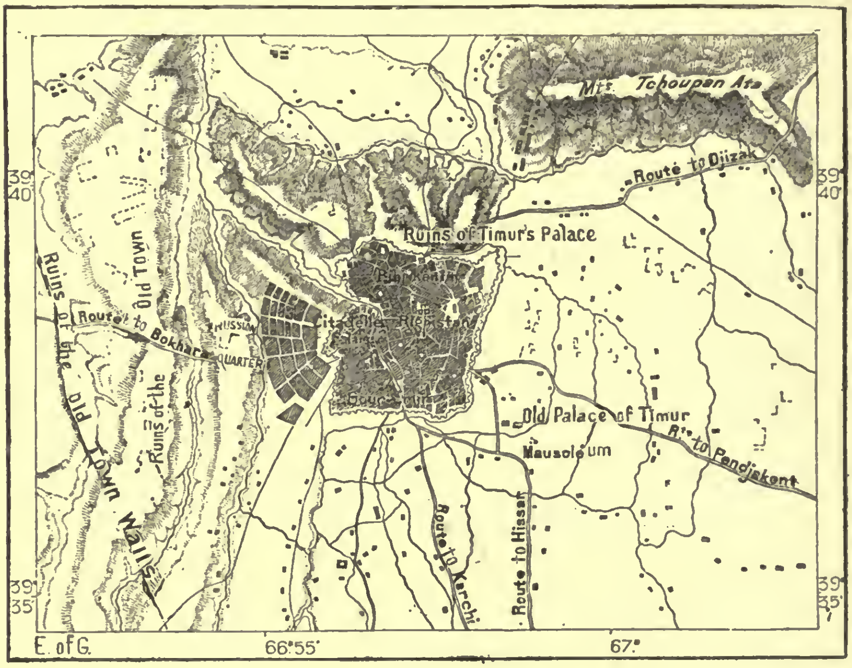
60 Miles.

thriving fishing village of Nikolayevsk has sprung up near Fort Alexandrovsk, under shelter of the Tuk-kuragan headland.

Of all the coast stations the most important is *Krasnovodsk*, the old Kizil-su, or "Red Water," at the head of the peninsula running west of the Balkan Gulf. The neighbouring pastures, springs, and arable lands, besides the deep water of the bay, which scarcely ever freezes, insure to Krasnovodsk a lasting importance. When the harbour works are completed a commercial city may here be rapidly developed. Although with scarcely 500 inhabitants, Krasnovodsk took rank as a town in 1877. It has already some stone houses, a club, and a public garden, but still lacks perfectly fresh water. Pending the construction of an aqueduct, it depends for its supply on sea-water distilled by condensing apparatus.

The naphtha wells, at the foot of the neighbouring Little Balkan hills, have been hitherto little worked, through fear of the marauding Turkomans. But over 2,000 wells have been sunk in the island of Cheleken, at the southern entrance of the Balkan Gulf. The naphtha is here remarkably pure and abundant. A single well, opened in 1874, yielded 100 tons per day, and the whole island may be said to rest on a vast bituminous lake. Krasnovodsk also exports sulphur from the south of the Kara-boghaz, and salt from the coast lagoons. It is now the chief outport of Khiva on the Caspian, having replaced Kohneh-bazar, lying farther south on the so-called Bay of Khiva. Lastly, it may serve as the base of the military

Fig. 149.—Samarkand.
Scale 1 : 170,000.



3 Miles.

operations which will probably ere long be directed from the Caspian towards Merv, Meshed, or Herat.*

The camp of *Chikishlar,* near the Bay of Hassan-kaleh, which receives the waters of the Atrek, is much less favourably situated. Troops can here be landed only on flat-bottomed boats, and the neighbourhood yields no supplies of any sort. The desert begins at the very gates of the fort; yet numerous scattered ruins show that this region was formerly covered with towns and villages. One emporium has succeeded another in this south-eastern corner of the Caspian, which is traversed by a great historical route leading from Western Asia to the Tian-shan

* Yearly movement between Krasnovodsk and Khiva (1874—7), 32 caravans, 5,164 camel-loads. Mean annual yield of naphtha (1874—7), 3,840 tons.

and China. *Abuskun*, whose ruins are now marked by the Gumish-tepe, or "Silver Cliff," between the Hassan-kaleh Bay and the mouth of the Gurgen, was an important mart in the eleventh and twelfth centuries. Its destruction is said to have been caused by a rising of the Caspian, produced by the inundations of the Oxus, when this river had resumed its course to the Balkan Bay. Abuskun was successively replaced by Nini-mardan, a few miles south of the Gurgen, and Alhom, at the entrance of the Bay of Astrabad. At present *Ashur-adeh*, at the extremity of the long peninsula enclosing this bay, would be the natural harbour of these waters but for the extremely unhealthy climate of the surrounding low-lying swampy district. North of Chikishlar are *Ak-tepe*, or the "White Cliff," and

Fig. 150.—Samarkand: Approach to the Citadel.

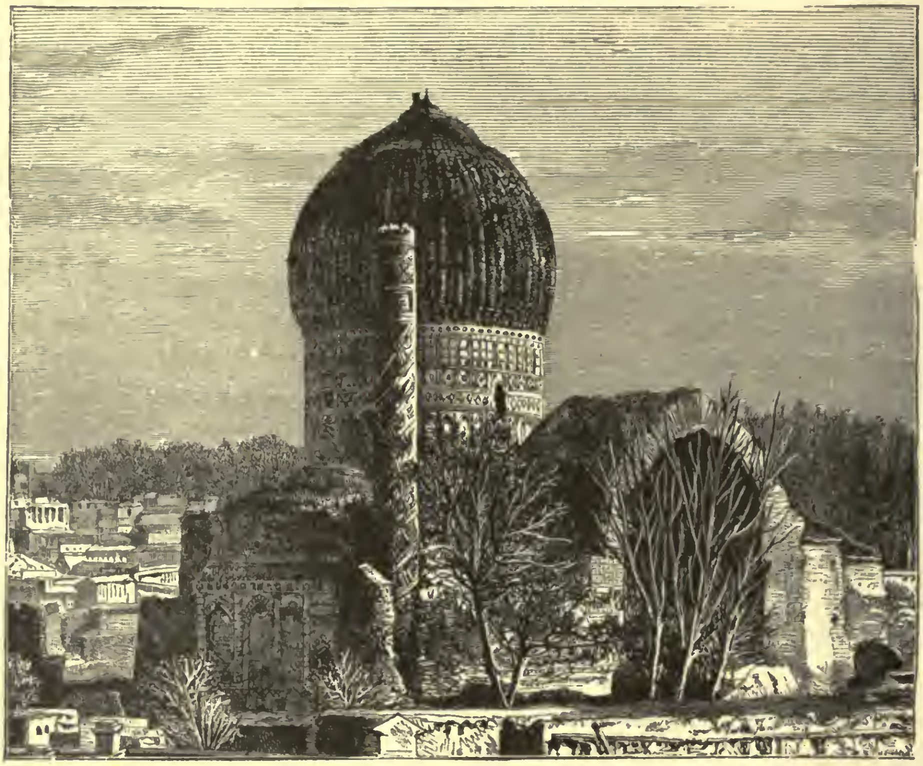
Geuk-tepe, or the "Yellow Cliff," round which the Yomuds have often pitched their tents.

In the Gurgen valley are the ruins of *Jordan*, the ancient Hyrcaniapolis, or "Wolf Town," a name which passed to the whole country and to the Caspian itself, often called the Hyrcanian Sea. About 70 miles north-east of Chikishlar lies the ruined city of *Mazduran*, whose Persian name indicates its position between Iran and Turan. According to the legend an archer endowed with supernatural force shot an arrow from the banks of the Gurgen, which fell on the site of Mazduran, and thus determined the limits of the two empires. The former importance of this place is shown by its extensive ruins, especially those of its aqueducts, which, at least in length, were surpassed only by those of the Roman Empire and the Ganges basin. One of these aqueducts traversed the district between the Atrek and its tributary the Sumbar, crossed the latter river, and after watering the plains of Mazduran discharged into the Caspian after a total course of 95 miles.

Ferghana Basin—Topography.

In the Russian possessions in Turkestan east of the Oxus is the Zarafshan valley. After leaving the highlands this river is distributed by numerous irrigation rills over the Penjakent district, beyond which the system of canals is still farther developed to the north of Samarkand and to the south-west towards Bokhara. To these fertilising waters of the Sogol, or Zarafshan, the ancient Sogdiana was indebted for its fertility in the midst of a vast semicircle of sands, and to the

Fig. 151.—Samarkand: The Gur-emir Tomb of Tamerlane.



same cause is due its present population of 30,000, of whom two-thirds are of Uzbeg stock. According to the Mazdean legend the Sogol is the second Eden, "created by the word of Ormuzd."

Samarkand, capital of this famous land, lies either on the site or close to the old city of Marcanda, whence its name, which, however, some refer to the Arab Samar, who took the place and introduced the Moslem religion in 643. Residence of the Samanides from the middle of the ninth to the eleventh century, it became under that dynasty "the asylum of peace and science," and one of the largest cities in Asia. It was defended by 110,000 men against Jenghis Khan, but after its overthrow by him the population was reduced to 25,000 families. Later on it became the centre of Tamerlane's vast empire, but it was again wasted by the

Fig. 152.—Varzaminor: Upper Zarafshan Valley.

nomads, and in the year 1700 had only one inhabitant. The ruins of the old city are strewn over the plain and surrounding heights; but its chief monuments date from

the time of Tamerlane and his successors. From a distance are visible above its walls the large blue domes and the minarets of its mosques, its palaces and colleges. In the north-east it is commanded by the Chupan-ata eminence, crowned with picturesque ruins and the tomb of a saint. At the foot of this hill the great canals of irrigation branch off in all directions.

Since the Russian occupation a new quarter has sprung up west of the citadel, regularly laid out with streets and avenues radiating like a fan towards the desert. But we must visit the labyrinth of narrow lanes in the Moslem quarter to realise what Samarkand was in the days of its greatness. Its magnificent schools, now schools only in name, are unrivalled for the splendour of their architecture, the details of which betray the Persian origin of their first designers. Most of the palaces dating from the Timur dynasty are now in ruins, though the façades, towers, or domes of a few are still in good repair. The chief public square, the Righistan, is flanked on three sides by the finest colleges in the place, including the Ulug-beg, founded in 1420, the renowned school of mathematics and astronomy, which in the fifteenth century made Samarkand one of the holy places of science. The most magnificent mosque in the city and in all Central Asia is the Shah Zindeh, or "Living King," so called from a defender of Islam, now buried in the building, but destined one day to rise again and reconquer the world to the faith of the Prophet. Tamerlane rests under the crypt of another mosque, the Gur-emir, on an eminence near the citadel, and still commanded by a minaret of rare elegance. In the vicinity are the tombs of his wives, with inscriptions commemorating his fame.

The citadel, comprising a whole quarter of the town, and in which the Russians have set up their administrative and military bureaux, also contains mosques, tombs, and the old palace of the emir, now a hospital. In a court of this palace stands a large marble block, 5 feet high and 10 feet long, said to have been brought by Tamerlane from Brusa, and to have been used by him and his successors as a throne, and on it were also beheaded the unsuccessful pretenders to the sovereignty.

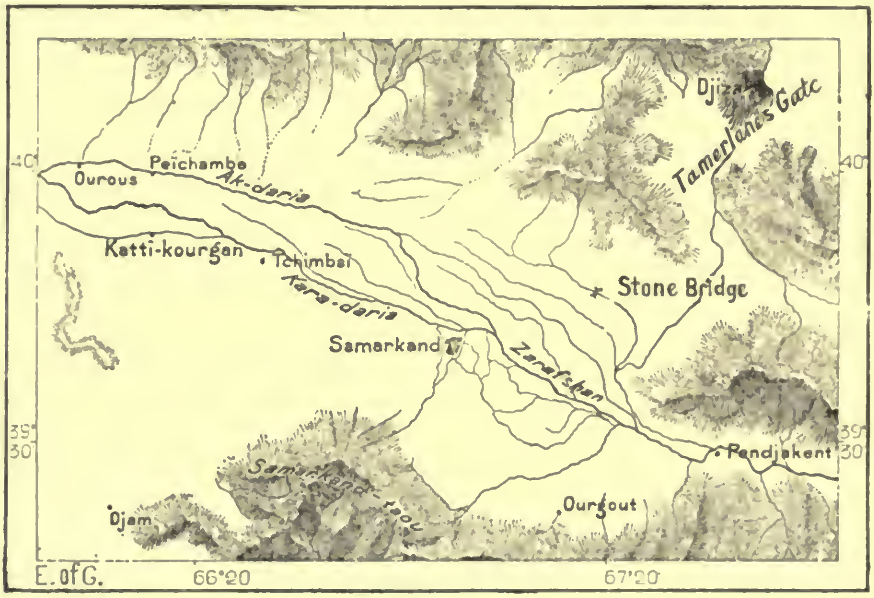
The inhabitants of Samarkand, more than half of whom are Tajiks, are more zealous " believers " than those of Tashkend and other places in Russian Turkestan. According to the old saying, while Mecca is the "Heart," Samarkand is the "Head of Islam." At the same time their religious fervour does not prevent the people from driving a brisk trade with their Russian masters, though the chief traders are Jews, Hindus, and Afghans. Almost the sole industry of the place is agriculture, which has converted the surrounding plain to a garden in the wilderness. The population has risen from about 8,000 in 1834 to over 30,000 in 1880, and, thanks to its happy situation in the neighbourhood of hills and healthy valleys, Samarkand cannot fail to become a chief centre of European civilisation in Turkestan.

Ascending the valley of the Zarafshan by the fortress of Penjakent, the traveller reaches Kohistan, the romantic land of the Galchas, with its gorges, cascades, and snowy ranges. Here are also some remarkable phenomena resembling those of volcanoes in eruption. The Kanlagh Mountain contains rich coal beds in

combustion, emitting dense volumes of smoke and mephitic gases, and at night casting a lurid light against the sky. In the higher valleys of this region pastures, crops, and thickets fringe the river banks, or, as at Varzaminor, clothe the upland alluvial terraces forming the basins of dried-up lakes. The auriferous sands of the Zarafshan are now searched only by a few wretched gold-washers.

The most populous part of the oasis is that which forms a continuation of the Miankal district of Bokhara. Here the villages form almost a continuous town from Katti-kurgan to Penshambe, while the orchards present from a distance the appearance of extensive woodlands. Some 24 miles south-east of Samarkand lies the town of *Urgut*, noted for its heroic defence against the Russians. Farther south a defile leads over the Samarkand-tau down to Shehr-i-sebs, while in the

Fig. 153.—Oasis of the Zarafshan.
Scale 1 : 560,000.



90 Miles.

north-east a large gap in the Kara-tau range is traversed by the route from Samarkand to Tashkend and the little river Jizak. This is the defile of Jilanuti, or of the "Snakes," so named either from its meandering stream or from the reptiles gliding amid its rocks. This important pass, guarded on the north by the town of Jizak, or the "Key," is one of the historic highways of Asia, and the scene of many a sanguinary struggle for the possession of Zarafshan or Sir-daria. West of it rises to a height of 400 feet a pyramidal slaty rock known as the "Gate of Tamerlane," though the two Persian inscriptions on its face make no allusion to this conqueror.

The abundance of water flowing from the Tian-shan valleys to Ferghana gives to this basin a great agricultural value. In the heart of the mountains the Narin

flows at too great an elevation above the sea to permit of any large towns springing up on its banks; but on emerging from the upper gorges and entering the north-east part of the Ferghana basin it soon becomes skirted with towns and villages. On its left bank stands the town of Uch-kurgan, in the midst of a fertile oasis. But the valleys watered by the torrents from the Toshktal Mountains are more productive than the lands fringing the northern bank of the main stream. They are laid out chiefly in gardens and orchards, while the oases on the left side are mostly under cereals. The banks of the Sir between the two zones are occupied by steppes. Hence the necessity of an exchange of commodities between the northern valleys and the southern plains.

Namangan is the chief town of the oasis lying at a distance from the river. It is a large place, with a bazaar containing one thousand shops, and with a cotton-spinning industry for the materials worn by the natives. As many as 300,000 sheep from the northern steppes are yearly sold at this place, and here also are constructed wooden floats on which fruits, skins, and felts are sent down the Sir to Perovsk and Kazalinsk. In the neighbourhood are rich naphtha springs and coal beds. *Kassan*, lying north-west of Namangan, in a well-cultivated district, claims to be the oldest town in Ferghana, and its Tajik inhabitants are the finest of their race in Turkestan. *Chust*, on a stream flowing from the Choktal Mountains, is a busy place, producing knives almost as highly prized as those of Hissar. Of the mineral wealth in the neighbouring hills the salt mines alone have hitherto been worked. On a steep cliff on the right bank of the Sir stands Ak-si, at one time capital of Kokan, and famous for its melons.

Populous towns are also situated in the valley of the Kara-daria, or "Black River," whose junction with the Narin below Balikchi forms the Sir. *Uzghent*, at the issue of the Tian-shan defiles, has become famous from the shrine of Haji Yusuf, the frequent resort of pilgrims. In this district is the frontier stronghold of *Gulcha*, guarding the Terek-davan Pass against the Chinese. *Andijan*, the chief town in this basin, though at a distance from the river, receives its waters through the irrigation canals. It is one of the pleasantest places in Ferghana, thanks to its shady gardens and deer park in the middle of the town. In the Kugaran valley, lying to the north-east, are the carbonated and sulphur hot springs of Jalabad-ayup, much frequented by the Sartes.

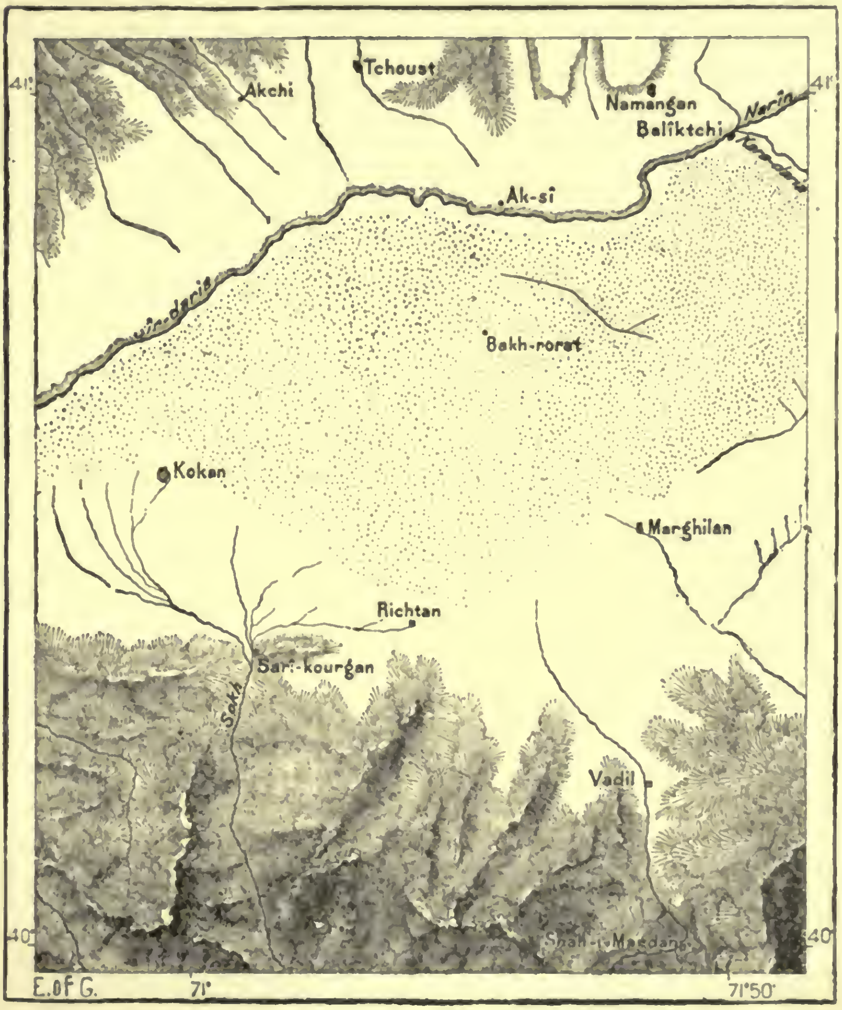
Osh, south-east of Andijan, and on the same river Ak-bara, a tributary of the Kara-su, occupies the issue of a fertile and healthy valley leading to the Alaï and Pamir. Here is the famous Takht-i-Suleiman ("Solomon's Throne"), a mountain the theme of so many Eastern legends; and here, according to some, the wise king summoned the genii to execute his mandates, while according to others it was here that he was assassinated. The rock, which is much frequented by pilgrims, commands a superb view of the surrounding highlands.

Several important towns are scattered over the Ferghana basin west of the Ak-bara valley. *Naûkat*, *Aravan*, and *Assakeh* stand on a stream flowing to the plain south of Andijan. Farther on are *Sharikhan*, now much reduced, and *Marghilan*, in the midst of extensive gardens, at the point where the Shah-i-mardan River,

flowing from the Alaï glaciers, ramifies into a number of irrigating rills. Owing to its healthy climate Marghilan has been chosen for the capital of Ferghana, although the new Russian town springing up here lies some 9 miles from the old Sarte town. Besides gardening the chief industry of the local Sartes is camel-hair, wool, and silk weaving.

South-west of Marghilan is the picturesque valley of the Isfaïran, the entrance

Fig. 154.—From Kokan to Marghilan.
Scale 1 : 1,000,000.



15 Miles.

to which is guarded by the small town of *Uch-kurgan*. Farther south is *Vadil*, a pleasant summer retreat on the Shah-i-mardan River, leading to the town of like name, one of the most frequented places of pilgrimage in Ferghana, thanks to the tomb of Ali, which it claims to possess in common with so many other Moslem towns.

The route from Vadil to *Kokan*, or rather Khukand, runs north-west by the foot of the mountains to Rishtan, where it enters the plain, here watered by innumerable rills from the river Sokh. Kokan, formerly capital of the state of like name, which has now become the Russian province of Ferghana, is still the chief place in the country in population, trade, and social culture. It was founded about one hundred and fifty years ago, and is well laid out with broad, regular, and tolerably clean streets, with extensive gardens in some quarters. Its Tajik inhabitants speak a remarkably pure Persian dialect. They are skilled artisans, largely engaged in paper-making, weaving, minting, gold and silver work, and other industries. The coin most generally current in Turkestan, and even beyond the Tian-shan, is the *kokan*, worth about sixpence, and struck, as stated in the legend, in "Kokan the Delightful" (*Khokandi Latif*). The inhabitants suffer much from goître, and it was owing to this malady that the Russians removed the seat of Government from Kokan. Its bazaar is nevertheless still the best stocked in Russian Turkestan, containing, besides the local produce, English, Russian, Persian, and Indian wares, antique jewellery, and genuine works of art. The chief monuments are some mosques and the old palace of the khans, all in good style and in far better preservation than those of Samarkand.

Khojend, the nearest town on the Sir to Ferghana, and the outlet for the produce of that province, has already become a double city. The Mohammedan quarters, occupied almost exclusively by Tajiks, stretch southwards along both banks of the Hoja-bakargan, flowing from the Alaï range. In the north the steadily increasing Russian quarter occupies the space between the old town and the left bank of the Sir. In summer the heat is intense, the solar rays being reflected on the town from the white cliffs of the Mogol-tau, near the north bank of the river, while the atmosphere is charged with the dust from the surrounding steppe. The Hoja-bakargan often runs dry, and then the women have to fetch the water from the steep banks of the Sir. Khojent is one of the oldest places in Turkestan, and till recently occupied an important strategical position near the old frontier, over against the fortress of Makhram, and not far from the point where the Sir bends north-westward to the Aral. South-west of it stands Irjar, scene of the decisive battle which in 1866 rendered the Russians masters of the land. Another place frequently mentioned in the records of the local wars is the fortified town of Ura-tepe, on the route between Samarkand and Jizak.

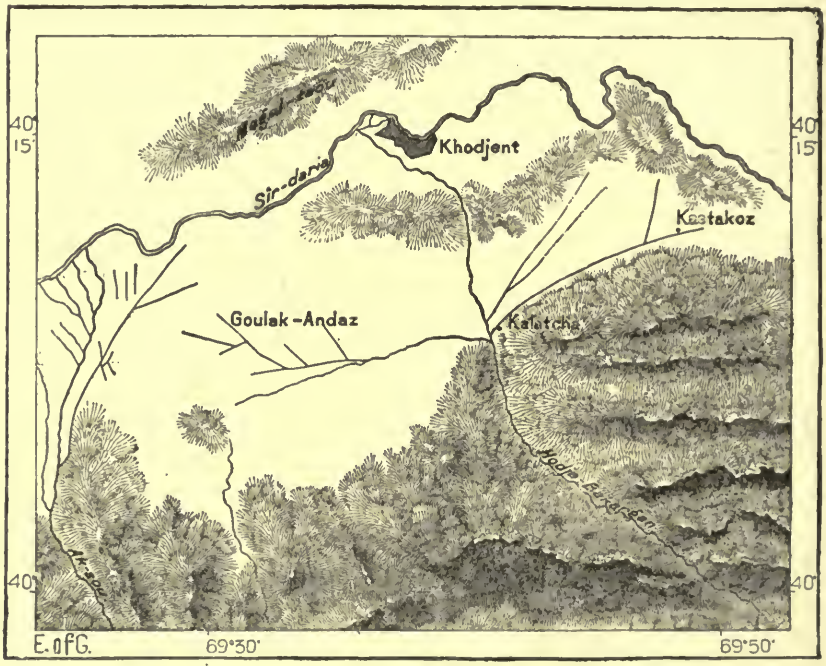
Yani-chinaz, or New Chinaz, at the junction of the Chirchik and Sir, is a mere hamlet, which the Russians hoped to make a flourishing city at the head of the navigation of the river. But this project was defeated by the difficulties encountered in this part of the stream, and Eski-chinaz, or Old Chinaz, some distance off, still remains the more populous of the two. On the other hand, Eski-tashkend, lying to the north-east on the same route, has been abandoned altogether for the new *Tashkend*, the present capital of Russian Turkestan, and one of the first cities in the empire. Covering a space as large as Paris, nearly 8 miles long and over 4 broad, Tashkend, or the "Stone Castle," consists mostly of low houses buried amidst a dense vegetation, in which the poplars, willows, and other trees lining the canals are topped only by

Fig. 155.—Khojend: General View.

the larger Russian buildings and the domes of a few minarets. Although not standing on a large river, its site is well chosen on the banks of the Chirchik,

which is abundantly supplied with water from the snows of the Ala-Tau and the torrents from the Choktal Mountains. It occupies the centre of the irrigated and arable lands stretching from Samarkand to the valleys of the "Seven Rivers," while communicating by easy routes with the upper valleys of the Sir, Talas, and Chu. After its easy capture by Chernaiev numerous adventurers were attracted to the new city, which in 1865 had become the centre of Russian authority in Turkestan. The Moscow and St. Petersburg traders thought they had discovered a new Eldorado, and rapid fortunes were at first made by wars and commerce. But the good times of wild speculation soon passed; most of the Russians now resident here are the Government officials and the military, and trade has again fallen mainly

Fig. 156.—Khojend and Neighbourhood.
Scale 1 : 460,000.



24 Miles.

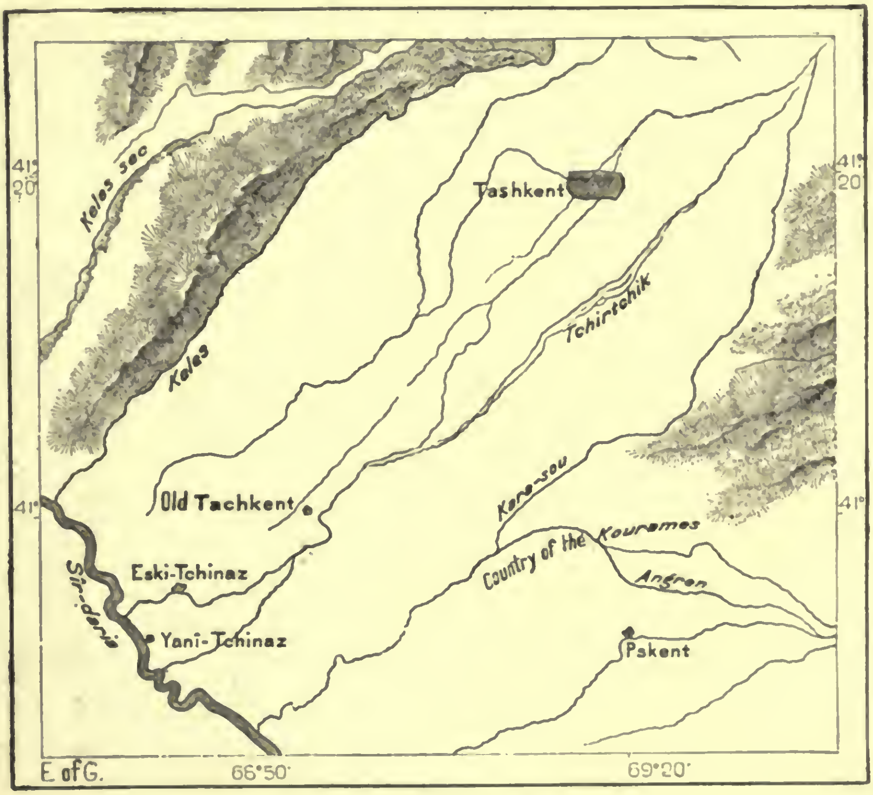
into the hands of the native Sartes and Jews. Immigrants from every part of Central Asia are met in the streets of Tashkend, and there is even a considerable Nogai Tatar community from Caucasia. In 1871—5 the population was estimated at 82,986, composed of the following heterogeneous elements:—Sartes, 75,176; Russians in the Asiatic quarter, 1,289; Russians in the European quarter, 4,860; Uzbegs, 708; Kirghiz, 375; Jews, 293; Germans, 110; Hindus, 93; Afghans, 25; Chinese, 3; Nogais and others, 64. Now the population exceeds 100,000.

The broad dusty streets lined with trees and white houses in the Russian quarter form a striking contrast with the low flat-roofed buildings of the Sarte districts. The roofs are generally composed of willow branches and reeds, covered

with a layer of earth laid out in grass-plots or flower beds. In the dry season this answers very well, but during the heavy rains the whole framework is apt to collapse, burying the inmates in its ruins. The houses have generally one story only, high buildings, such as palaces and mosques, running great risks from the frequent earthquakes. In summer the Russians retire to Zangi-ata and other pleasant retreats, where they camp out like the Uzbegs in the midst of sylvan scenery, pure air, fragrant flowers, purling streams, and warbling songsters.

The growth of Tashkend has outstripped that of its industries, which are still mainly restricted to silk-weaving, tanning, the manufacture of china (*chini*), felt,

Fig. 157.—Plain of Tashkend.
Scale 1 : 800,000.



12 Miles.

and camel-hair goods. But the local artisans are no longer able to compete with the products imported from Russia, consisting chiefly of cottons, silks, hardware, wood and leather ware, and colonial produce. In return Tashkend exports raw cotton and silk, and its yearly increasing exchanges now amount to about £4,000,000. Its trade was represented in 1873 by 82,500 camel-loads, 4,296 horse-loads, and 3,648 waggon-loads. Great efforts have been made by the Government to establish an international fair at Tashkend, such as those of Nijni-Novgorod and Irbit. But although recourse was even had to fines and other coercive measures, the commercial stream refused to enter the new bed prepared for it, and the site of the fair, about

5 miles from the regular bazaar, opened in 1870, had been completely abandoned four years afterwards.

Tashkend boasts of a club with a library of 10,000 volumes, an observatory, a school of sericulture, a normal school, and an Official Gazette containing useful documents on Turkestan and the surrounding lands. In 1879 a branch of the Russian Geographical Society was established here. But of the two other scientific bodies one was killed by official patronage, the other by official oppression.

Chinkent, north of the capital, occupies an analogous position in a well-watered district, and is a place of some commercial and strategic importance, standing in the western issue of the broad opening between the Kara-tau and the Alexander range

Fig. 158.—A Street in Tashkend.

which connects the Sir and Balkhash basins. The kumis prepared by the Kirghiz in the neighbourhood is said to be the best in Turkestan.

Following the postal route from Tashkend to Orenburg along the southern foot of the metalliferous Kara-tau range, the traveller reaches the old city of *Yasi*, where Timur founded a famous mosque in 1397 in honour of Hazret Yasavi, special patron of the Kirghiz. This mosque, which has suffered both from earthquakes and the Russian guns in 1864, was left unfinished by its Persian architect. Yet, such as it is, this vast ruin, the most sacred spot in Central Asia, still produces an imposing effect, especially when seen from the steppe, towering with its square masses above the ruined walls of the town. This region of Tatary is a land of

ruins. Numerous fortresses, formerly defending the fords of the Sir, are now abandoned, and the plains are strewn with kurgans. *Otrar*, on the Sir south of Turkestan (Yasi) witnessed the death of Timur in 1405, and the site of Suran, or Savrun, another ruined city west of the same place, was till recently marked by two elegant minarets.

The ancient *Ak-mechel*, or "White Mosque," on the Lower Sir, takes its present name of *Perovsk* from the Russian General Perovsky, who captured it in 1853, and made it a military station, round which a new town has sprung up. Standing at the head of the old delta near the Yani-daria branch, it lies on the direct route from Persia through Khiva to Siberia, and is doubtless destined one day to become a great commercial emporium. Meantime its trade is less active than that of Kazalinsk, on the main branch of the Sir. This town, formerly known as Fort No. 1, succeeded in 1855 to Raïm, at the mouth of the river, as the military station of this district. It lies in a cultivated and well-watered tract at the intersection of the main routes from Orenburg to Tashkend, and from Herat through Khiva to Yekaterinburg, and has already become a thriving trading-place.

On the Lower Oxus there are nothing but military posts such as Petro-Alexandrovsk and Nukus, commanding the banks of the river, or villages such as Chambai, mostly deserted in summer, in winter often crowded by thousands of Kara-Kalpak nomads. The now desert tract between the Sir and Oxus, formerly watered by the Yani-daria, was at one time dotted with numerous towns, of which Yani-kend, or "Newcastle," was still standing when Gladishev passed this way in 1742.

In the Kirghiz steppes stretching north of the Aral Sea Turgai and Irghiz are small towns, deriving some importance from their position as centres of administration. They are stations gladly hailed by the traveller after his long and weary journey across the sands and steppes.

Along the northern foot of the Tian-shan there stretches a zone of cultivated lands comparable to that of the western slope, but containing no large towns since the massacres that have changed most of the Ili basin to a wilderness. Aûli-ata, on the Talas, the first post occupied by the Russians east of the Kara-tau, although not yet ranking as a town, does a brisk trade in wheat and cattle. About 9 miles farther north are the ruins of Tumkent, also on the Talas, and 30 miles higher up are the far more remarkable ruins of a vast structure, whose blocks of red sandstone, 6 or 7 feet long, cover a space of nearly 8 acres. They are said to have been hewn for a Buddhist monastery, though the Chinese traveller Chang-Chun, who visited the place in 1221, speaks of a "red stone town." He also mentions the great tumuli "disposed like the stars of the Great Bear," and known to the Kirghiz as the "Seven Mounds," although there are sixteen altogether.

The region stretching east of Aûli-ata along the northern slope of the Alexander range is the country of the "Thousand Springs" mentioned by the Chinese pilgrim Hwen-T'sang, and where was established the kingdom of Kara-kitai, or "Black China," by many supposed to have been one of those kingdoms of "Prester John," long sought for in Abyssinia, Caucasia, and Central Asia.

Here runs the great historical route between China and the West; but the cities founded along this route by one conqueror were overthrown by another, and nothing now remains but ruins. Such is *Tokmak*, the old capital of the Kipchak state, 16 miles above the new Tokmak, centre of the chief Russian colony in the valley on the route leading through the Kaslek Pass to Verniy. This place, now capital of the province of the "Seven Rivers," is the old Almati, dating as a Russian town only from 1867. Consisting of separate quarters gradually approaching each other, it presents quite a Siberian aspect with its broad streets, low wood or brick houses, and Russian sign-boards. Yet the population is far from being exclusively Russian, including representatives of nearly all the Central and Northern Asiatic races, besides Afghans, Mordvinians, Chuvashes, and Cheremissians. Trade is mostly in the hands of the Chinese, who have several industrial establishments here. *Verniy* is the depôt of the copper utensils of Russian manufacture used by all the inhabitants of Central Asia as far as the confines of Tibet. North of it are the village and fort of Iliisk, guarding the passage of the river and the routes to Kulja and the territory of the "Seven Rivers."

In the latter region the most populous place is the city of *Kopal*, at the northern foot of the Zungarian Ala-tau, and on the river Kopal, which is lost in the swamps some 60 miles south of Lake Balkhash. *Lepsinsk*, chief town of the Lepsa valley, is a thriving place, and *Ujarskaya*, beyond the Sassik-kul and Ala-kul Lakes, does a considerable trade with the nomads. *Sergiopol*, the old Aya-guz of the Tatars, is conveniently situated on the Aya-guz, flowing to the east end of Lake Balkhash. Lastly, in the heart of the Tian-shan the centre of Russian civilisation is *Karakol*, nearly 10 miles from the eastern extremity of Lake Issik-kul.

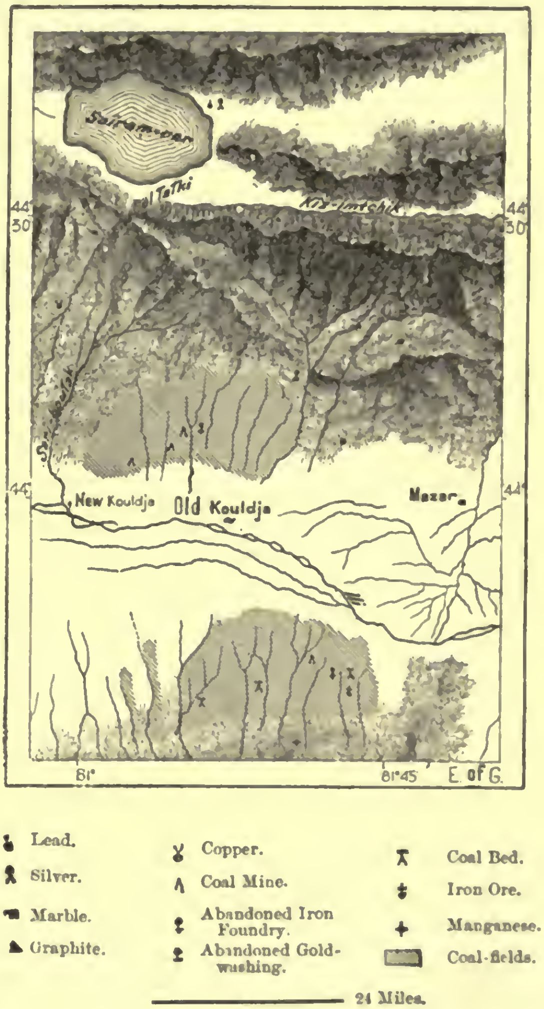
So long as the Slav population of the country was limited to Cossack detachments settled here as military colonists, every Russian village was the scene of drunkenness and excesses of every sort. Instead of cultivating their own gardens the Cossacks plundered those of their neighbours, cutting down their orchards for fuel. So far from civilising the Kalmuks, they gradually became assimilated to those nomads, not in their honesty, but in the rudeness of their manners. To give themselves grand airs they spoke Mongolian like them, as if their Slav origin were a mark of inferiority. But the free immigration of the Russian peasantry has entirely changed the system of colonisation, which is now making rapid progress. The mir, or communal system, has penetrated into these fertile valleys, where Russian is replacing Mongolian culture, though many years must pass before the land can be as extensively cultivated and peopled as formerly. Everywhere are visible the remains of towns and Buddhist monuments, the traces of canals, funeral mounds, many of which contain gold vases incrustated with precious stones.

Kulja Basin—Topography.

East of Verniy the river Ili waters the fertile province of Kulja, which before the terrible events of 1869 is said to have had a population of 2,500,000. But

after the massacres the country was changed to a vast necropolis. On all sides nothing is visible but canals choked or changed to swamps, abandoned fields, wasted forests, towns and villages in ruins. Ascending the Ili valley beyond the fort of Borokhudzir and the forest of dwarf elms planted by the Chinese, piles of stone mark in succession the sites of the towns of Turgen, Jar-kend, Ak-kend, Khorgos, Alim-tu. The walls and towers of some old fortresses are still standing, but through the breeches nothing is visible except heaps of ruins half concealed beneath the rank vegetation and roots of trees. The city, founded by the Chinese in 1764 as the capital of the province under the various names of Ili, New Kulja, Manchu Kulja, Hoi-yuan, presents a woeful spectacle. The walls of the fortress are still standing; here and there is seen a dilapidated tower; sculptured gateways and walls covered with frescoes contrast with the confused masses of débris; while in some places the ground is strewn with bleached bones. After the Taranchi butchers had done their work the streets of Ili were choked with 80,000 bodies of their victims, and even in 1876 the only symptoms of revival were two or three houses occupied by Dungans. *Bayandai*, farther east, said to have had 150,000 souls, has now nothing but a few fragments of walls; but the little town of *Suidun*, lying north of it, is still inhabited.

Fig. 159.—Kulja and Neighbouring Mines.
Scale 1 : 1,500,000.

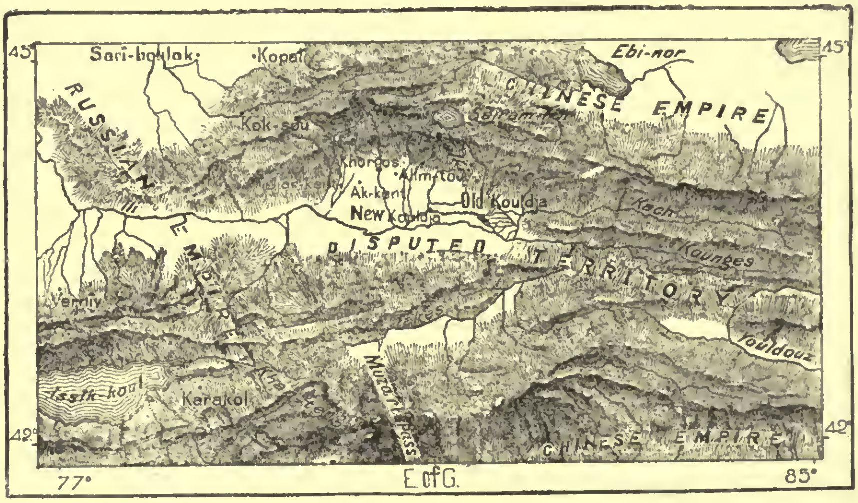


Old Kulja, known also as Tatar Kulja, Nin-yuan and Kuren, standing like Ili on the right bank, is the present capital; but it enjoyed this position before Ili itself. Like all the towns built by the Chinese, it forms a regular square surrounded by a high crenellated wall, broad enough on top to serve as a carriage drive. Two main streets leading to the four gates intersect each other at right angles, thus forming four smaller squares of equal size, and themselves subdivided into others by streets and lanes. But although laid out by the Chinese,

Kulja retains the appearance of a Turkestan city in the architecture of its monuments, and in its baked-earth houses covered with clay roofs like those of the Uzbegs and Sartes of Central Asia. The Dungans and Chinese of this place do a considerable trade, and even possess some industrial establishments, mills, and the like. But the marbles, iron, sulphur, coal, and other minerals of the neighbouring hills are little worked. The inhabitants are mostly Mohammedans, and amidst the numerous mosques there are but two Buddhist temples besides a Roman Catholic chapel, served by French missionaries, and, since the Muscovite occupation, some Russian churches.

The Russian Government having occupied Kulja only pending the pacification of the country by the Chinese, the Slav colonists have not been authorised to settle in the country. A few soldiers, traders, and travellers have been the only Europeans

Fig. 160.—Disputed Territory in Kulja.
Scale 1 : 6,500,000.



120 Miles.

in the Ili valley, in the midst of its Tatar, Kalmuk, Taranchi, Dungan, and Chinese inhabitants. After tedious diplomatic negotiations a treaty was at last ratified in August, 1881, in virtue of which Russia restores to China the Kulja territory as far as the river Khorgos, but retains a strip of land for the settlement of those who may become Russian subjects within the year. The threatened war having thus been averted, it is probable that other settlers from the West will now also begin to make their appearance in the fertile valleys watered by the affluents of the Upper Ili. On the streams in this part of the Tian-shan highlands there are no more towns or villages, but the numerous rivers show that the country was formerly well peopled. In the valley of the Tekes, south-east of Kulja, are the ruins of an ancient capital of the Mongol khans, now known to the Kirghiz as the Ak-kurgan, or "White Mound." Buildings belonging to diverse civilisations still give evidence of the struggles formerly engaged in for the

possession of this magnificent region. In the valley of the Kash are seen many idols and blocks bearing Tibetan inscriptions, and near Khorgos, east of Kulja, stands a mosque, in its style resembling those of Samarkand.

Administration of Turkestan.

Most of Russian Turkestan consists of pastures, desert, and other waste lands, the arable space being estimated at present at no more than one-fifteenth of the whole area. But although the water supply is less abundant than formerly, the rivers now flowing to saline basins or unhealthy marshes might be utilised in reclaiming vast tracts from the desert. Estimating such tracts at about one-sixth of the whole Aralo-Caspian region, this would still represent an area larger than France, and sufficient to support 40,000,000 people. Most of the required irrigation works would also consist of restorations of older systems. The banks of the Sir north and west of Bokhara, and nearly all the space between the two main arteries, were formerly under cultivation, and the steppe of "Hunger" has borne this name only since the sands have invaded the *ariks*, by which it was at one time furrowed in all directions, and which it is now proposed to repair.

Fig. 161.—Chinese Type, Kulja.

The lands brought under irrigation give excellent results, even under the rude system practised by the natives. All the oases laid out as gardens support one or more towns, and it is by gardening rather than by ordinary tillage that the people chiefly live. In the Bokhara plains the gardens are seven times more extensive than the land under crops, which occupy large spaces only on the slopes of the hills.

The cotton crop, which has considerably increased of late years, is valued at 50,000 tons, of which two-thirds come from Bokhara. This plant grows as far as Kazalinsk, on the Lower Sir, but the Asiatic fibre is much inferior to the American, and is also prepared in such a slovenly way as to exclude it altogether from the West European market. The quantity exported to Russia rose from 677,000 roubles in 1858 to 5,513,000 in 1867. Silk has made still more rapid progress, the export to Russia having increased from 69,000 to 1,273,900 roubles between the same years. The Bokhara crop alone now amounts to about 2,500,000 lbs. In some districts the mulberry is the ordinary tree everywhere lining the hedges and fields. The native wool is very coarse, and so badly sorted and washed that it is useless except

for weaving inferior cloth. Yet some of the carpets are remarkable for their strength, and especially for the beauty and originality of their designs. They are woven by the Turkoman women under the guidance of a matron, who traces the design on the sand, counts the number of threads, and selects the colours and shades. The camel-hair fabrics, also very solid, have replaced linen for sacking, soldiers' blouses, and other purposes.

But the chief wealth of the country is its live stock, valued altogether at 100,000,000 roubles. The fat-tailed sheep supply a large quantity of the tallow required for local consumption. The Kirghiz yearly export to Russia about 500,000 roubles' worth of wool, while the sale of the animals themselves all along the line between Troïtzk and Semipalatinsk amounts to 3,500,000 roubles. The Kirghiz derive an annual revenue of over 5,000,000 roubles from their horses, and altogether the "balance of trade" is in favour of these nomads as against their Russian masters. Yet the live stock is diminishing from the effects of cold, storms, disease, and other causes. The importation of corn into the steppes has also fallen off, owing to the increasing poverty of the nomads. In the province of Turgai the cattle are said to have been reduced in the winter of 1879-80 from 860,000 to 50,000.

In theory the soil of Turkestan cannot be held absolutely, the right of possession existing only so long as it is kept under cultivation. If allowed to lie fallow for three years it reverts to the State, which again disposes of it to whoever is willing to pay the tax. The land incapable of tillage may be said to be common property, all having unrestricted right to its pastures and timber. The cultivated land is inherited from father to son without the intervention of the State, except where it is enjoyed in usufruct, as with the *vakuf* lands, whose revenues belong to religious or educational bodies. The State allows the owners the right to a certain quantity of water for irrigation purposes, but may regulate the rotation of the crops according to the greater or less abundance of the supply.

Comprising so many desert tracts and so few inhabitants and towns, the administration of Russian Turkestan presents special difficulties. Owing to the absence of any common centre, the people easily escape from the direct control of the authorities, and till recently many were able to maintain their independence, thanks to their nomad life and the vast regions over which they roamed. The sedentary populations also occupy the territories farthest removed from the centre of the empire, and if left to themselves they would soon form new political groups without much regretting their release from the Slav yoke. The annexation of these lands to Russia is a question of brute force, and has its justification neither in the sympathy of the people for their conquerors, nor in any resemblance in origin, speech, culture, habits, or customs. In every respect the racial antagonism is complete. But for the ultimate goal of India, and, perhaps, China, the Russians would never have cared to penetrate much beyond the banks of the Ural and the shores of the Caspian.

Central Asia is meantime held in military tenure. Hence the necessity of connecting this region with European Russia by means of good highways. The small trade and resources of the Aralo-Caspian provinces are far from sufficing to

pay the cost and maintenance of a great line of railway, and the requirements even for a greatly increased traffic would still be met by the caravan service across the natural routes of the steppe and desert. The new lines now projected are accordingly mainly intended to connect Tatary with Russia, and secure the absolute ascendancy of the Czar in Central Asia. For such a purpose the rivers and seas of the land are of little use. The Oxus no longer flows to the Caspian, while the Aral and its affluents are navigable only for light craft and for a part of the year. The cost of this navigation already far exceeds the military and commercial advantages to be derived from it. Hence the project of a trunk line to connect Tashkend, Samarkand, and Bokhara with the European railway system. This line

Fig. 162.—Projected Railway Lines in Western Asia.
Scale 1 : 60,000,000.

Open — In Progress. — Russian Projects — English Projects.

900 Miles.

has already by anticipation been named the "Great Central Asiatic," and hopes are entertained that some day the trade of India may be attracted this way.

But this question of the future trunk line to India is affected by political rivalries. The Russians on the one hand, the English on the other, have a national interest in looking at things from different points of view; and the line oscillates between north and south according to the nationality of the engineers. To the projects of Lesseps and Baranovsky, favoured by Russia, are opposed those of Hochstetter and Rawlinson, more convenient for Austro-Hungary and England. But viewing the question from the higher standpoint of the general interest of mankind, apart from the political balance of the states struggling for exclusive sway

in Asia, it must be confessed that the best route is that which follows the most direct line from the great centres of trade and population in Europe to the Ganges basin. This line is obviously that which, starting from Calais and Ostend, will ere long connect the Atlantic seaboard with Constantinople, and Constantinople ultimately with India through Kandahar and Kurachi. To this line the Caucasian might be connected by a junction or branch line. With the north Russia will also possess one of the great highways of the world's trade, running from the Volga to the Hoang-ho basin by the historic route through the Zungarian depression. Thus the projected Turkestan lines must always remain subordinate as connecting links between the two great trunk lines from Europe to India and from Russia to China.*

However useful it may prove from the commercial point of view, the Turkestan line will at all events have no great physical difficulties to overcome. The chief obstacle occurs at Orenburg itself, its western terminus, where the Ural River will have to be crossed by a bridge over 1,330 feet long. The "Black Sands" north of the Aral will not prove so difficult as was formerly supposed, the dunes being here separated from each other by level tracts running south-eastwards right in the direction of the line. Another route crossing the Emba morass follows the Ust-urt depressions and the plains of Khiva, ascending the Oxus valley towards Afghan Turkestan and the passes in the Indian Caucasus. Other projects consist in turning the Kara-kum desert on the north, with a junction to the future Siberian system viâ Troïtzk and Yekaterinburg. The section from Orenburg to Tashkend might probably be laid down for £8,000,000. But beyond that point towards the Indian frontier many serious difficulties present themselves, nor have any preliminary surveys yet determined the best route through Baktriana and over the Hindu-Kush.

The government of Turkestan is purely military. The Governor-General, known to the natives as the "Yarin-padishah," or "Half King," disposes of royal powers over his subjects. He is at once the head of the administration, commander-in-chief of the military forces, plenipotentiary of the Czar in all diplomatic relations with the neighbouring lands. His salary is fixed by no regulations, depending entirely on the will of the Czar. In order to increase his power the Siberian provinces of Semirechinsk, Turgai, Akmolinsk, and Semipalatinsk have been attached to Turkestan, which is now nearly as extensive as the whole of European Russia.

The various provinces are administered on the model of the Russian governments, with such modifications as are occasioned by the preponderance of the military element. The governors of the provinces are named by the Minister of War, and assisted by a provincial council chosen by the Governor-General. At

* Respective length of the projected lines of railways and navigation between London and Calcutta:—

	Miles.
By Calais, Constantinople, and Kandahar	5,470
„ Ostend, Warsaw, Baku, and Teheran	5,880
„ „ Orenburg, and Tashkend	6,480
„ Brindisi, Alexandretta, and Bassorah	6,885
„ „ Suez, and Bombay	7,200
„ the Cape of Good Hope	12,870

the head of the "circles" is a prefect, who is responsible for the taxes and the maintenance of peace. At the same time the autonomy of the tribes is not altogether ignored, and their usages are respected so far as is compatible with the general interests. The Kirghiz, grouped in *aûls* of from one hundred to two hundred families, and in larger communities known by the Russian name of *volost*, or "bailiwick," choose their own elders and judges for all tribal affairs. The Uzbegs, Sartes, and Tajiks of the towns also appoint their *aksakal*, or "white beards;" but this privilege depends on the will of the Governor-General, who may set aside any of the elected magistrates. Hence the urban elections have mostly become a mere formality, and all the military, administrative, and judicial functions may be said to be practically in the hands of the Russian officer of highest rank in the Turkestan cities. Freedom of worship is absolute, and the absence of persecution has had much to do with the diminished zeal of the Mussulmans. Public instruction is still but slightly appreciated by the people, and in the whole of Turkestan there are scarcely more than 5,000 Moslem children receiving a regular education. Secondary instruction is represented by the *medresseh*, or "colleges," where little is learnt except the reading of the Koran. In some of the primary schools the Russian language is already taught.

The chief source of expense is the army, which averages 30,000 men, but which, as in 1880, may be raised to 80,000. All supplies have to be drawn from Russia, a distance of 2,400 miles, and the consequence is that the Turkestan budget always shows a yearly deficit of from 2,000,000 to 10,000,000 roubles. The expenditure is about four times the income, and three-fourths of this expenditure are absorbed by the army. The land tax, which gives rise to great waste, produces about 1,275,000 roubles, and the whole revenue scarcely exceeds 2,500,000 roubles, while the expenditure averages 8,000,000 roubles. The income of the khanate of Kokan alone amounted, before the Russian conquest, to 2,290,000 roubles.

CHAPTER IV.

SIBERIA.

I.—SIBERIA.

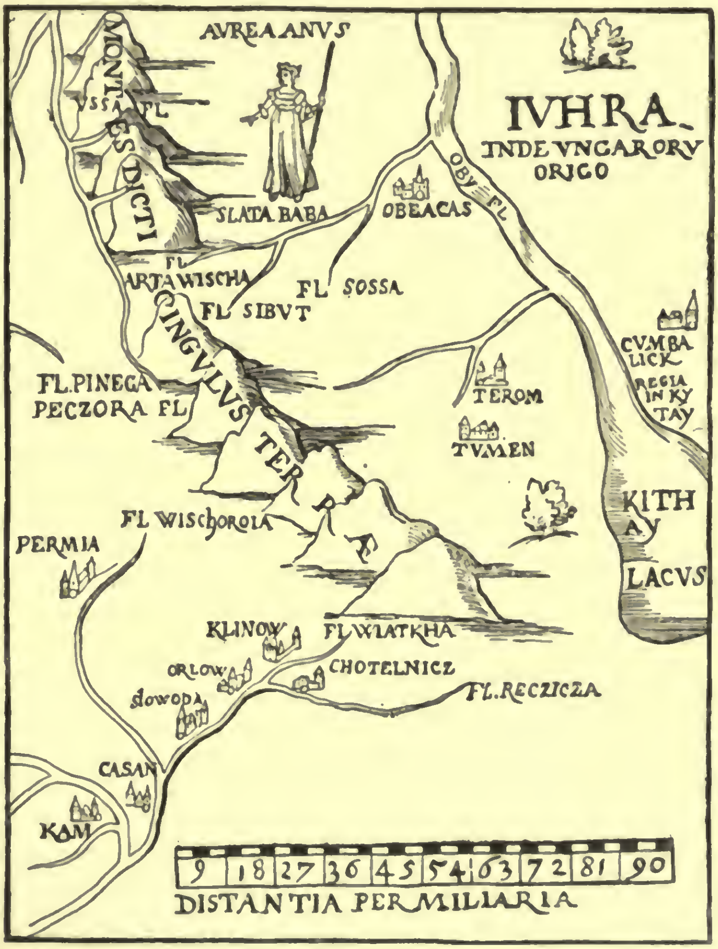
SIBERIA is emphatically the "Land of the North." Its name has by some etymologists been identified with "Severia," a term formerly applied to various northern regions of European Russia. The city of Sibir, which has given its name to the whole of North Asia, was so called only by the Russians, its native name being Isker. The Cossacks, coming from the south and centre of Russia, may have naturally regarded as pre-eminently the "Northern Land" those cold regions of the Ob basin lying beyond the snowy mountains which form the "girdle of the world."

Long before the conquest of Sibir by the Cossacks, this region was known to the Arab traders and missionaries. The Tatars of Sibir were Mohammedans, and this town was the centre of a great fur trade. The Russians themselves had constant relations with the inhabitants of the Asiatic slopes of the Urals, and the Novgorodians were acquainted with the regions stretching "beyond the portages." Early in the sixteenth century the Moscow Czars, heirs of the Novgorod power, called themselves lords of Obdoria and Kondinia; that is, of all the Lower Ob basin between the Konda and Irtish confluence, and the station of Obdorsk, under the Arctic Circle. Their possessions—that is, the hunting grounds visited by the Russian agents of the Strogonov family—consequently skirted the great river for a distance of 600 miles. But the Slav power was destined soon to be consolidated by conquest, and such is the respect inspired by force that the successful expedition of a Cossack brigand, on whose head a price had been set, was supposed to have led to the discovery of Siberia, although really preceded by many visits of a peaceful character. Even still the conquering Yermak is often regarded as a sort of explorer of the lands beyond the Urals. But he merely established himself as a master where the Strogonov traders had been received as guests. Maps of the Ob and of the Ostiak country had already been published by Sebastian Munster and by Herberstein a generation before the Cossacks entered Sibir. The very name of this town is marked on Munster's map.

Progress of Conquest and Discovery.

In 1579 Yermak began the second plundering expedition, which in two years resulted in the capture of the capital of the Tatar kingdom. When the conquerors entered Sibir they had been reduced from over 800 to about 400 men. But this handful represented the power of the Czars, and Yermak could sue for pardon, with the offer of a kingdom as his ransom. Before the close

Fig. 163.—West Siberia, according to Herberstein.



of the sixteenth century the land had been finally subdued. Sibir itself, which stood on a high bluff on the right bank of the Irtish, exists no more, having probably been swept away by the erosions of the stream. But 10 miles farther down another capital, Tobolsk, arose, also on the right bank, and the whole of the north was gradually added to the Czar's dominions. The fur trappers, more even than the soldiers, were the real conquerors of Siberia. Nevertheless, many battles had to be fought down to the middle of the seventeenth century. The Buriats of the Angora basin, the Koriaks, and other tribes long held out; but most of the

land was peacefully acquired, and permanently secured by the forts erected by the Cossacks at the junctions of the rivers, at the entrance of the mountain passes, and other strategic points. History records no other instance of such a vast dominion so rapidly acquired, and with such slender means, by a handful of men acting mostly on their own impulse, without chiefs or instructions from the centre of authority.

Even China allowed the Cossacks to settle on the banks of the Amur, though the treaty of Nerchinsk required the Russians to withdraw from that basin in 1689. But during the present century they have been again attracted to this region, and the Government of St. Petersburg is now fully alive to the advantages of a free access by a large navigable stream to the Pacific seaboard. Hence in 1851 Muraviov established the factory of Nikolaievsk, near the mouth of the Amur, and those of Mariinsk and Alexandrovsk at either end of the portage connecting that river with the Bay of Castries. During the Crimean war its left bank was definitely secured by a line of fortified posts, and in 1859 a ukase confirmed the possession of a territory torn from China in time of peace. Lastly, in 1860, while the Anglo-French forces were entering Pekin, Russia obtained without a blow the cession of the region south of the Amur and east of the Ussuri, stretching along the coast to the Corean frontier.

And thus was completed the reduction of the whole of North Asia, a territory of itself alone far more extensive than the European continent. In other respects there is, of course, no point of comparison between these two regions. This Siberian world, where vast wildernesses still remain to be explored, has a foreign trade surpassed by that of many a third-rate European seaport, such as Dover or Boulogne. Embracing a thirteenth part of the dry land on the surface of the globe, its population falls short of that of London alone; it is even more sparsely peopled than Caucasia and Turkestan, having little over one inhabitant to 1,000 acres.

Accurate surveys of the physical features and frontier-lines are still far from complete. Only quite recently the first circumnavigation of the Old World round the northern shores of Siberia has been accomplished by the Swedish explorer, Nordenskjöld. The early attempts made by Willoughby, Chancellor, and Burrough failed even to reach the Siberian coast. Hoping later on to reach China by ascending the Ob to the imaginary Lake Kitaï—that is, Kathay, or China—the English renewed their efforts to discover the "north-east passage," and in 1580 two vessels, commanded by Arthur Ket and Charles Jackman, sailed for the Arctic Ocean; but they never got beyond the Kara Sea. The Dutch succeeded no better, none of the voyages undertaken by Barents and others between 1594 and 1597 reaching farther than the Spitzbergen and Novaya Zemlya waters. Nor were these limits exceeded by Hendrich Hudson in 1608. This was the last attempt made by the navigators of West Europe; but the Russian traders and fishers of the White Sea were familiar with the routes to the Ob and Yenisei Gulfs, as is evident from a map published in 1600 by Boris Godunov. However, sixteen years afterwards the navigation of these waters was interdicted under pain of death, lest foreigners should discover the way to the Siberian coast.

The exploration of this seaboard had thus to be prosecuted in Siberia itself by means of vessels built for the river navigation. In 1648 the Cossack Dejnev sailed with a flotilla of small craft from the Kolîma round the north-east extremity of Asia, passing long before the birth of Bering through the strait which now bears the name of that navigator. Stadukhin also explored these eastern seas in search of the islands full of fossil ivory, of which he had heard from the natives. In 1735 Pronchishchev and Lasinius embarked at Yakutsk and sailed down the Lena, exploring its delta and neighbouring coasts. Pronchishchev reached a point east of the Taimir peninsula, but failed to double the headlands between the Lena and Yenisei estuaries. The expedition begun by Laptiev in 1739, after suffering shipwreck, was continued overland, resulting in the exploration of the Taimir peninsula and the discovery of the North Cape of the Old World, Pliny's Tabin, and the Cheluskin of modern maps, so named from the pilot who accompanied Pronchishchev and Laptiev. The western seaboard between the Yenisei and Ob estuaries had already been surveyed by Ovtzin and Minin in 1737—9.

Fig. 164.—Sakhalin, according to La Pérouse.
Scale 1 : 11,110,000.

180 Miles.

But the problem was already being attacked from the side of the Pacific Ocean. In 1728 the Danish navigator Bering, in the service of Russia, crossed Siberia overland to the Pacific, whence he sailed through the strait now named from him, and by him first revealed to the West, though known to the Siberian Cossacks eighty years previously. Even Bering himself, hugging the Asiatic coast, had not descried the opposite shores of America, and was uncertain as to the exact position of the strait. This point was not cleared up till Cook's voyage of 1778, and even after that the Sakhalin, Yesso, and Kurile waters still remained to be explored. The shores of the mainland and islands were first traced by La Pérouse, who determined the insular character of Sakhalin, and ascertained the existence of a strait connecting the Japanese Sea with that of Okhotsk. This completed the general survey of the whole Siberian seaboard.

Fig. 165.—Gulf of Castries: La Pérouse Gate.

The scientific exploration of the interior began in the eighteenth century with Messerschmidt, followed by Gmelin, Müller, and Delisle de la Croyère, who

determined many important physical points between the years 1733 and 1742. The region stretching beyond Lake Baikal was explored by Pallas and his associates in 1770—3. The expeditions, interrupted by the great wars following on the French Revolution, were resumed in 1828 by the Norwegian Hansteen, whose memorable expedition in company with Erman had such important results for the study of terrestrial magnetism. While Hansteen and Erman were still prosecuting their labours in every branch of natural science, Alexander von Humboldt, Ehrenberg, and Gustav Rose made a short visit to Siberia, which, however, remained one of the most important in the history of science. Middendorff's journeys to North and East Siberia had also some very valuable results, and were soon followed, in 1854, by the "expedition to Siberia" undertaken by Schwartz, Schmidt, Glehn, Usoltzev, and associates, extending over the whole region of the Transbaikal to the Lena and northern tributaries of the Amur. Thus began the uninterrupted series of modern journeys, which are now being systematically continued in every part of Siberia, and which promise soon to leave no blanks on the chart of that region.

The work of geographical discovery, properly so called, may be said to have been brought to a close by Nordenskjöld's recent determination of the north-east passage, vainly attempted by Willoughby, Burrough, and so many other illustrious navigators.

Water Highways—Portages—Highlands.

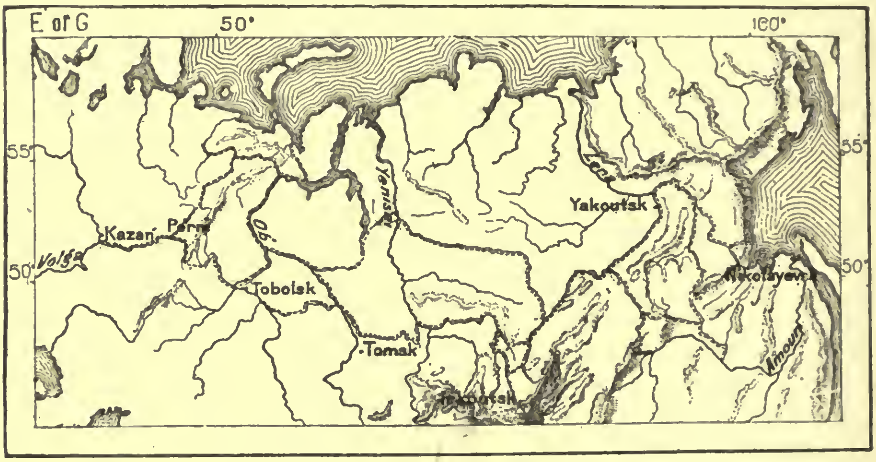
A large portion of Asiatic Russia is no less uniform than Russia in Europe itself in the general features of its relief. East and west of the Urals alike there stretch vast plains or rolling prairies offering no obstacles to free migration. To traverse Siberia from end to end the sole difficulties man had had to contend with were the boundless distances themselves, the severity of the climate, dense forests, and swampy wastes. Instead of arresting their progress, the great streams were the natural highways by which the Cossacks were enabled to overrun these solitudes as far as the Pacific seaboard. Owing to the slight elevation of the land the main river basins merge imperceptibly with each other, and Cossacks and natives alike generally followed these routes in their migratory movements, warlike or peaceful expeditions. Hamlets, villages, towns, have thus sprung up along the river banks wherever productive lands invited colonisation. From the Ural to Yakutsk, a distance of about 6,000 miles, the continuous water highway is broken only by two portages, the first between the Ob and Yenisei basins, the second between the latter and that of the Lena.

On leaving the Ural valleys the chief navigable route follows successively the course of the Tura, Tobol, Irtish, Ob, Ket, Yenisei, Upper Tunguska or Angara, Lena, and Aldan. Farther north other rivers, also connected by portages, lay open to the conquerors of Siberia; but between the Middle Lena and Amur basins many Cossack expeditions were defeated by the obstacles presented by the reefs and rapids, dense woodlands, morasses, and the unproductive character of this region. Their plans were often badly conceived, and in their search for the "White Fountain," or the "Land of Gold," they often proceeded in the wrong direction.

Thus Lake Baikal was long sought for, not in the Yenisei basin, but east of the Lena towards the Pacific Ocean. Poyarkov, the first Russian who in 1673 reached the Amur valley, ascended the river Aldan, and then crossing the Stanovoi range, followed the southern course of the Zičya; but he lost one-third of his 130 men on the road, and the survivors had to live on their dead comrades or on the natives slain in battle.

The journeys by water, which rendered the conquest of Siberia so easy, can scarcely be made except in the middle region running east and west. Southwards the river basins are separated from each other by plateaux, highlands, and mountain ranges; farther north the main streams have already received all their chief affluents, so that here there are no more available water byways, while in any case these frozen wastes are too inhospitable to be easily traversed by the most daring adventurers. East of the Yenisei, again, the lowlands change their character,

Fig. 166.—Water Highways and Portages across Siberia.
Scale 1 : 35,000,000.



600 Miles.

the low-lying, fertile, or lacustrine tracts, swamps, and trembling prairies being here succeeded by hilly and gravelly lands, here and there crossed by rocky ridges, and rising even to groups of eminences difficult of access. The Yenisei and Lena basins are, in fact, separated by a real plateau of palæozoic rocks, compelling the traveller to turn southwards. Hence the administrative division of the land into West and East Siberia is fully justified by the physical contrast between the two regions, a contrast extending to their flora, fauna, and inhabitants.

Even in the extreme north the monotony of the plains is sometimes interrupted by clusters of elevated hills. Middendorff has given the name of "mountains" to the Siverma chain running west of the Yenisei within the Arctic Circle, and to the Birranga range, which occupies the northern part of the continent between the Yenisei and the Khatanga, and which forms the double Taimir peninsula projecting far into the Frozen Ocean. Some of the summits on the east coast of this peninsula

are said to have an elevation of no less than 3,000 feet. Still Siberia may, on the whole, be described as a plain sloping uniformly in a north-westerly direction. A distinct water-parting between the rivers flowing, on the one hand, northwards to the Arctic, on the other to the inland basins of Central Mongolia and to the Pacific, is formed by the great orographic system comprising the Tian-shan and Zungarian Ala-tau, the Tarbagatai and Altaï, the Sayan Mountains, the Baikal highlands, the Vitim plateau, the parallel Yablonoi ranges, and the north-east section of the Stanovoi, or "Dorsal Chain," running towards Bering Strait.

This vast system is itself composed of distinct sections, clearly separated one from the other. North of the Tian-shan is the Zungarian depression, where at one time flowed a marine strait. The Upper Irtish valley, between the Tarbagatai and Altaï ranges, also forms a broad opening connecting the Kirghiz and Mongolian domains west and east. Between the Altaï and Sayan Mountains the northern and southern basins are connected by similar depressions, while farther east, about the sources of the Yenisei and its western affluents, uplands with a mean elevation of from 7,000 to 10,000 feet form the frontier chain skirting the Mongolian plateaux, every stream here affording easy access from Siberia to the Chinese Empire. Transbaikal is itself a hilly plateau, limited south-west by two eminences—the Kamar-daban, at the extremity of the lake, and the Sokhondo, commanding one of the main ridges of the Yablonoi system, on the Mongolian frontier. From this plateau the ascent is almost imperceptible to the hills from 3,500 to 4,000 feet high, which lead from the Selenga to the Amur; that is, from the Arctic to the Pacific basin. North-eastwards the water-partings diminish in height, and beyond the Sokhondo none of the Yablonoi or Stanovoi summits would appear to reach 9,500 feet, which is about the elevation of that mountain. North of the Amur and Ud basins the lofty ranges figuring on the maps as portions of the "Great Divide" are often in reality little more than marshy tracts with undecided inclination. But the whole of Eastern Siberia skirting the Sea of Okhotsk north-eastwards to the Bering Sea is mountainous, or at least very diversified, and here the land everywhere rises highest near the sea-coast.

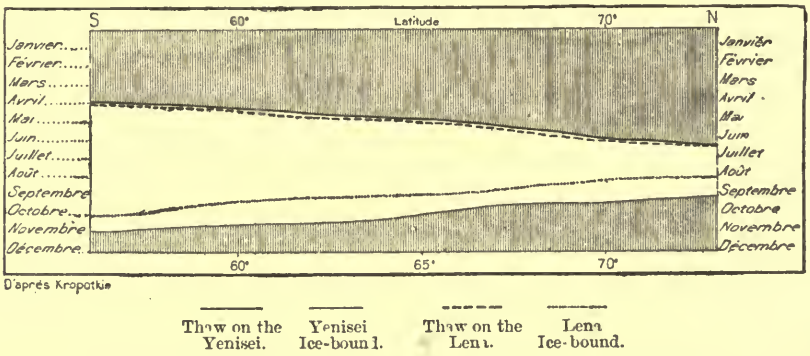
South of the Stanovoi highlands the region watered by the Amur and its affluents may, on the whole, be regarded as a mere continuation of the Mongolian plateau. The land slopes towards the Pacific in a series of terraces intersected by a number of nearly parallel ridges, including the Great Khingan, the Little Khingan, and the coast range running north of the Corean peninsula. These Eastern Asiatic river and coast ranges are regularly disposed in curves, with their convex sides facing east and south-east, and often describing perfectly equal segments of a circle. Some are connected at their extremities in a series of continuous chains festooned at uniform intervals; others are disposed in parallel concentric arcs, while the more important are rooted at one end with different systems. Thus the Kamchatka peninsula and Kurile Archipelago (the most geometrical of all) are connected with the hills of the Chukchi country. This prevailing uniformity in the disposition of the North-eastern Asiatic mountain systems must be largely due to volcanic agencies. While old sedimentary formations prevail in the South

Siberian highland ranges bordering on the Mongolian plateau, the Sikhota-alin, as well as various Manchurian mountains, in former times ejected lava streams, and still-active volcanoes fringe the east coast of Kamchatka. These Kamchatka mountains are, however, totally distinct from the East Siberian systems, and are the most elevated in Asiatic Russia next to the Tian-shan. One of the volcanoes in the peninsula is nearly as high as Mont Blanc.

River Systems.

The rivers rising in the glaciers and perpetual snows of the Altaï and Sayan, or on the slopes of the less elevated ranges falling short of the snow-line, are remarkable for the great uniformity of their windings. Owing to the general tilt of the land they flow mainly north and north-west in the whole of Siberia, limited southwards by the ranges stretching from the Tian-shan to the Stanovoi. Not only the three main streams, Ob, Yenisei, and Lena, but nearly all the other

Fig. 167.—Duration of the Frost and Thaw on the Yenisei and Lena.



rivers, follow the line of the meridian in their northerly course. The Lena, however, so far contrasts with its two western rivals that it is deflected a long way eastwards by the palæozoic rocks of Central Siberia before resuming its northern course parallel with the neighbouring Olonek and Yana.

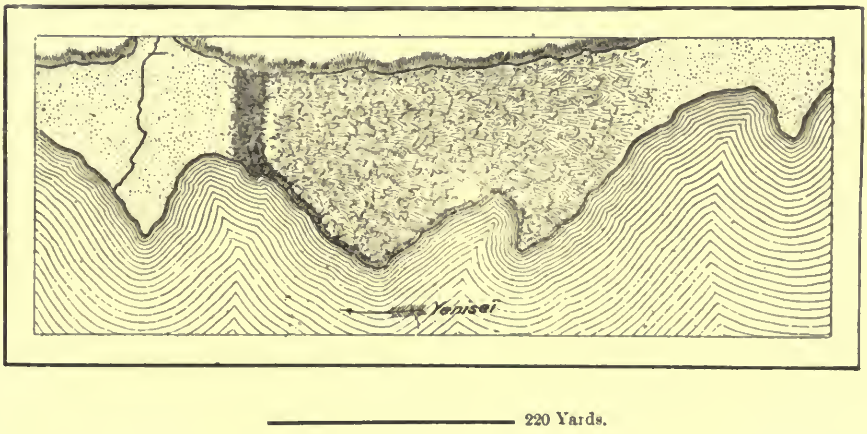
These great arteries rank with the largest rivers on the globe, both in volume and the extent of their basins. In these respects the Ob, Yenisei, and Lena surpass all the European streams. Yet the mean annual rainfall in all the Siberian lands draining northwards scarcely exceeds 8 inches. But the ground being frozen to within a few inches of the surface, there is no loss by infiltration, so that wherever the land slopes ever so slightly every drop of water from the rains or melting snows must necessarily find its way to the affluents of the Arctic Ocean. Elsewhere it remains in flats, marshes, or shallow lakes, which form a labyrinth of land and water, constantly shifting its outlines with the abundance of the rains and intensity of the evaporation. The Taimir peninsula has thus become a lacustrine region of stagnant waters.

Estimating at about half of the annual snow and rain fall the quantity discharged

by the three main streams, the mean volume of each must be at least equal to 350,000 cubic feet per second, or four times that of the Rhine or Rhone. But the discharge is very unevenly distributed over the year, being much reduced in the ice-bound beds of the streams in winter, when the smaller rivers are frozen to the bottom, and the large streams and lakes to a depth of from 4 to 7 feet. Except those fed by underground rivulets from the great lakes, all the rivers rising within the Arctic Circle thus cease to flow in winter. But with the melting of the snows the river beds are soon filled again, often overflowing their banks to great distances.

In winter the water flowing beneath its thick icy covering is said gradually to "die," and the fish are no longer able to live in the vitiated atmosphere at these depths. Towards the end of autumn they escape in multitudes either to the lakes and deep pools or to the estuaries. Then they may be easily taken in large quantities by simply breaking the ice wherever the water has remained "alive." Immediately

Fig. 168.—Drift Ice on the Banks of the Yenisei.
Scale 1 : 6,400.



after the thaw they ascend the streams in vast shoals, and spread over the flooded plains and forests. Here also they are captured in great numbers by means of the system of weirs set up at the mouths of the affluents.

The flow of the Siberian rivers along the line of the meridian causes the break-up of the ice to assume a special character. In the extreme south, or at the base of the Altaï, they are ice-bound for from three to five months only; but this period is extended as they flow northwards, and the estuaries between the 72nd and 75th parallels are free only for periods varying from sixty to one hundred days in the year. Free navigation can, in fact, be depended upon only from about the end of July to the middle of September. Middendorff has calculated that for every degree of latitude between the 56th and 72nd, the ice-bound period increases on an average rather more than nine days. But farther south the increase is not quite seven days, this discrepancy being largely due to the absence of springs in the north.

In spring, when the current begins to resume its course and break through its

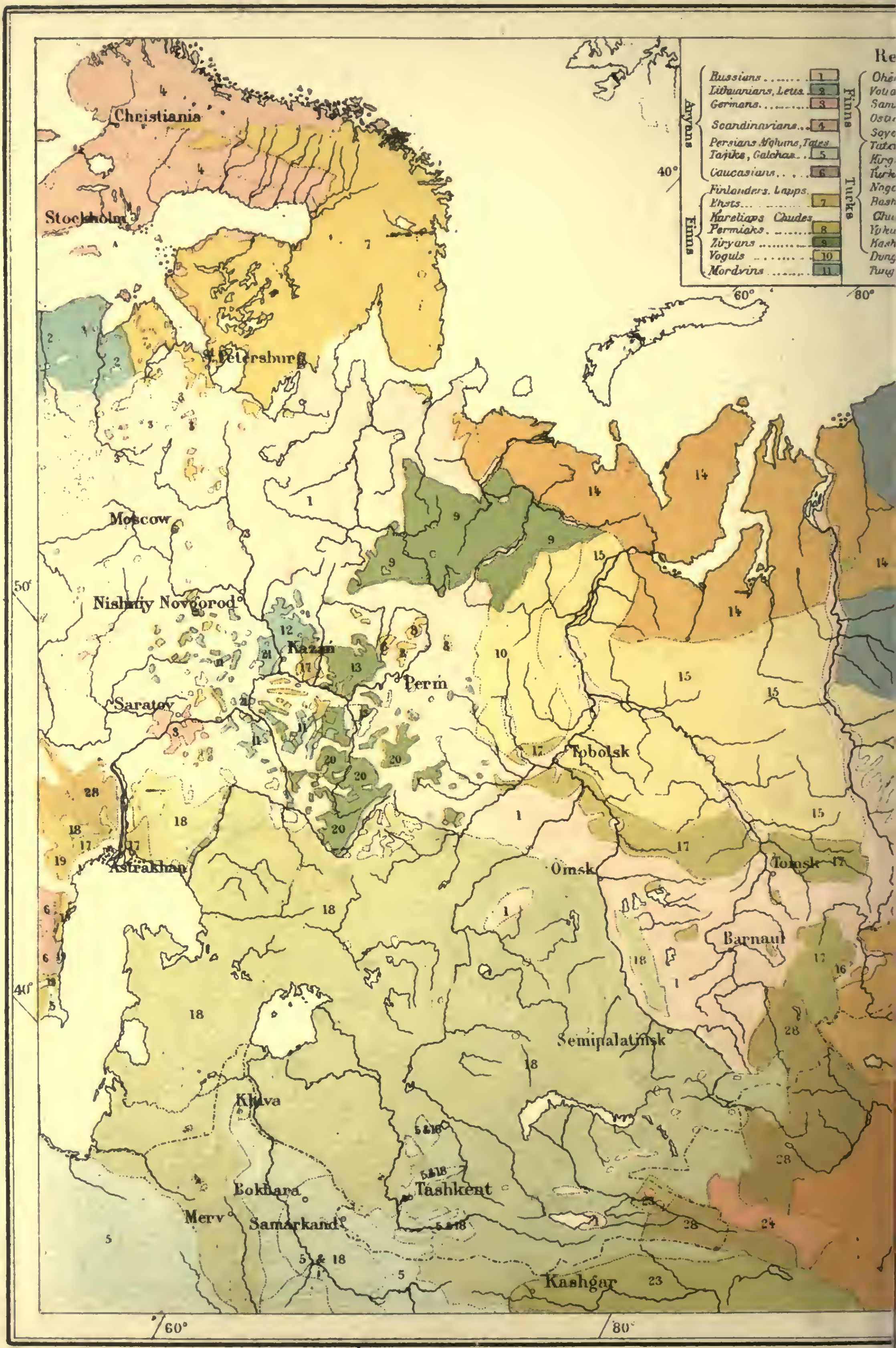
wintry fetters, it soon floods both its banks, thus forming two *zaberegi*, or lateral channels, while the main stream is still frozen on the surface. Here the ice then begins gradually to arch upwards until it breaks into huge irregular fragments, which are swept along by the continually rising stream. These fragments torn from the river banks carry with them mud, clay, gravel, and even large boulders, which in their northward course soon meet with still unbroken masses strong enough to resist their pressure. The moving masses are also at times retarded by the

Fig. 169.—Shores of the Yenisei worn by Glacial Action.

fierce polar winds, and perhaps lodged at the foot of some projecting bluff. Here the blocks are piled one on the other, damming up the river, and causing it to rise 3 or 4 feet in a few hours. Finding no escape, ice and water spread laterally, dashing against the banks, sweeping away the shingle, in one place forming fresh dams, in another scoring the ground with deep furrows. Thus are the river banks yearly modified by glacial action.

Even more than the rivers of European Russia, those of Siberia, flowing nearer

ETHNOGRAPHICAL M

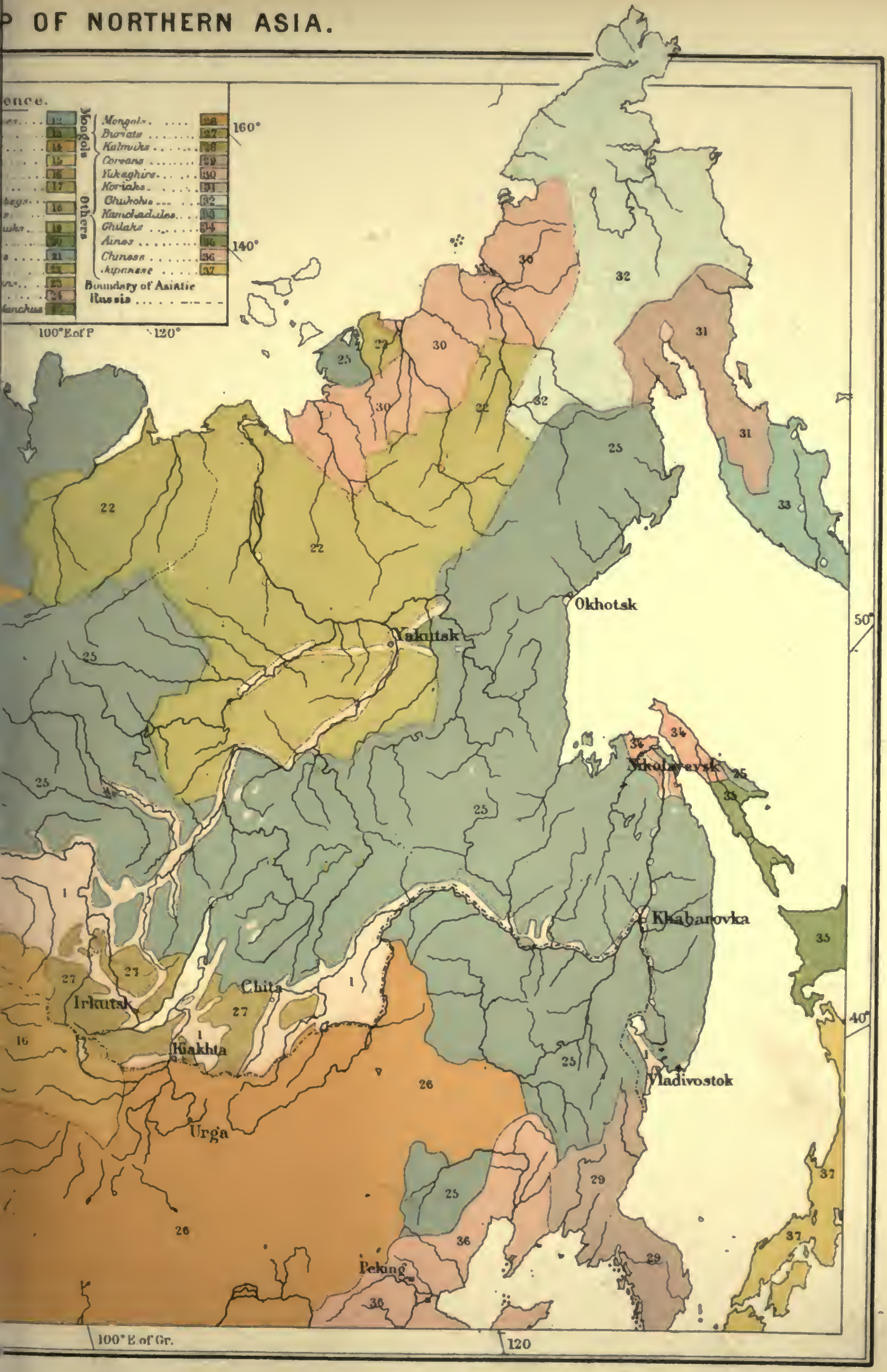


Drawn by A. Slom, after Castren, Middendorff, Veniukov, Rittich and Chavanne.

Scale

NEW YORK

P OF NORTHERN ASIA.



600,000.

500 Eng. Miles

APPLETON & Co

to the pole, present the remarkable phenomenon of a normal lateral pressure on their right banks. This side thus becomes continually sapped and corroded, while the left bank, covered with alluvia, and here and there furrowed by old channels, is steadily abandoned by the receding waters. Hence the contrast presented by the relief of both banks. The left, still swept by the current and gradually formed by alluvial deposits, is flat, and generally at the level of high water. The right, constantly eroded by the lateral pressure of the stream, and representing the original soil, rises in hills or steep cliffs along the course of the river. So universal is this feature that even before sighting a river the natives will speak by anticipation of its "high bank" and "low bank." As in Russia, the towns are usually erected on the "high," or right bank, which is less exposed to inundations. But this advantage is dearly purchased, and several recently founded towns, such as Tobolsk, Semipalatinsk, and Narim, have already had to be partially reconstructed.

Northern Seaboard.

The northern seaboard of Siberia, though washed by colder waters, is less indented by fiords than those of Norway and Scotland. The inlets resemble those of Scandinavia only between the Kara and Yenisei mouths. The Kara Sea, the Ob and Taz estuaries, the Gulf of Yenisei, and their various indentations; lastly, the lakes, at one time marine bays, but now separated from the sea, give a Norwegian aspect to this region. But east of the Yenisei the coast-line becomes far more uniform, broken by rare inlets, few of which penetrate far inland. This dearth of fiords is due to the slight inclination of the mainland and of its submarine continuations, precluding the formation of true glaciers on the coast, the action of which might have prevented the original indentation from being gradually effaced.

The present seaboard itself is an old marine bed gradually upheaved above the Arctic waters. The old coast-line has been traced by Erman, Middendorff, and others over 120 miles inland, and upwards of 330 feet above the present sea-level. Quantities of drift-wood, the so-called "Adam's" or "Noah's wood," have been found at great distances from the ocean. Here also have been met numerous bays which have become lakes, or quite dried up, besides perfectly preserved frozen banks of shell-fish in no respect differing from the species now inhabiting the Arctic seas. Headlands have even been recognised which were islands when seen by earlier explorers. Several phenomena of a like character were recently observed by Bove, of the Nordenskjöld expedition, near Bering Strait. The disappearance of the whale has by some been attributed to the upheaval of the sea-bed, while Erman, with others, has suggested that the remains of trees occurring on the coast represent the forests that flourished on the spot at a time when the climate was much warmer than at present. But the condition in which this "Adam's wood" is found shows that it is really so much drift-wood, barked and otherwise affected by glacial action. It consists of conifers like those which are still floated down the great Siberian rivers. In the course of ages "mountains of timber" have thus been accumulated

almost everywhere along the shores of the Frozen Ocean and around the coasts of New Siberia, Novaya Zemlya, Franz-Joseph Land, and Spitzbergen.

The current of the Siberian rivers is strong enough perceptibly to affect the normal marine currents. On entering the sea the streams have naturally an eastward tendency, derived from the rotation of the earth on its axis. But this is also the direction of the waters from the tropical seas, which, after rounding Scandinavia and Novaya Zemlya, continue to flow slowly eastwards along the Siberian seaboard. This tendency is doubtless preserved by the action of the fluvial currents, for near the coast the water is far less salt than in the Atlantic. Between

Fig. 170.—Banks of the Yenisei: Ice-formed Levee.

the Khatanga Fiord and the Lena estuary the proportion of salt is only as 1 to 100, or about one-third of the normal quantity. On these shores the sea is so shallow that two-thirds of its volume are probably of fluvial origin.

Pacific Seaboard—Transbaikalia.

Along the shores of the Okhotsk and Bering Seas the slope is too short to allow of any large rivers. Here the ranges forming the water-parting run near the Pacific seaboard, and some head-streams of the Lena rise actually within 60 miles of the Sea of Okhotsk. The only important river north of the Amur draining to

the Pacific is the Anadir, which falls into the gulf of like name between Bering Strait and Kamchatka. But south of the Sea of Okhotsk the Amur, draining all the lacustrine basins which formerly covered the plateaux of Daûria and Mongolia, escapes through a gap in the coast range to the Pacific.

The middle course of this river, forming the frontier-line between Russia and China, is free of ice for six or seven months in the year. But the lower reaches flowing north-east and north present the same phenomena as the rivers of North Siberia. The annual break-up is retarded down stream; the ice forming temporary dams on the reefs and ledges arrests the floods, causing them to overflow and break down their banks, uproot the forests, and cover the land with mud and stones.

The plateaux separating the Lena and Amur basins seem of all the Siberian lands to have best preserved the aspect of the country after the glacial period. Here every cavity is still filled with a lake or a marsh; the rivulets and rivers are mere links in a chain of lacustrine basins of all sizes; pine-covered moraines here and there, cleared by the action of water, recall the presence of ancient glaciers; and there is altogether something unfinished in the general aspect of the land, as if the transition were not yet completed from one geological epoch to another. The rivers have not yet scooped out their valleys or regulated the fall of their beds. In all these respects the Siberian plateaux resemble those of Finland and Scandinavia, which, like them, are mainly composed of granites, schists, and other crystalline rocks.

Most of the myriad lakes and lakelets of these tablelands have already disappeared, either drained off by the rivers or filled in by their alluvia. But Lake Baikal, one of the largest, still remains. This great inland sea, occupying two continuous cavities in the plateau between the Yenisei, Lena, and Amur basins, stood formerly at a far higher level than at present. It drains now through the Angara to the Yenisei. But it is nevertheless geographically distinct from that basin. Its valley runs nearly at right angles with the Angara, and its bed sinks several hundred yards below sea-level. Its outlet merely carries off the surface waters.

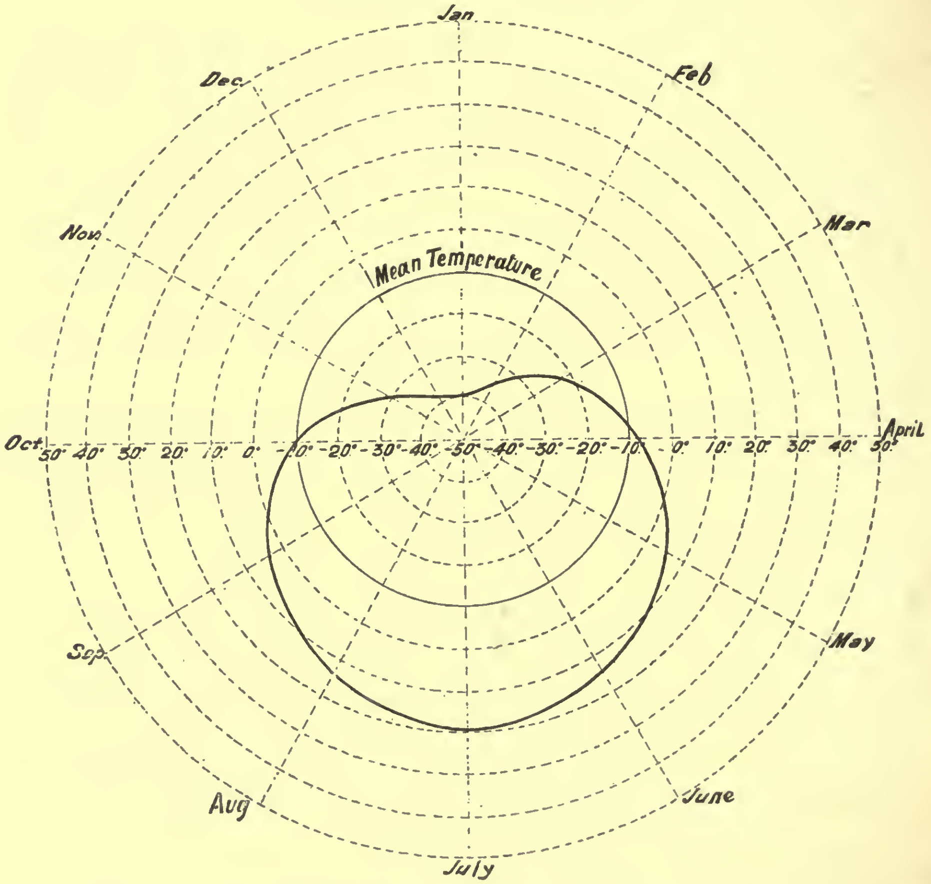
Climate.

Such a vast region as Siberia, affected in the west by Atlantic, in the east by Pacific influences, and stretching north and south across 29° of latitude, must obviously present great diversities of climate. Even this bleak land has its temperate zones, which the Slav colonists of the north are fond of calling their "Italics." Nevertheless, as compared with Europe, Siberia may, on the whole, be regarded as a country of extreme temperatures—relatively great heats, and, above all, intense colds. The very term "Siberian" has justly become synonymous with a land of winds, frosts, and snows. The mean annual temperature in this region comprised between the rivers Anabara and Indigirka is 20° Fahr. below freezing point. The pole of cold, oscillating diversely with the force of the lateral pressure from Yakutsk to the Lena estuary, is the meteorological centre round which the atmosphere revolves. Here are to a large extent prepared the elements of the

climate of West Europe. Owing to the general movements of the atmosphere, alternating between north-east and south-west, and between south-west and north-east, constant relations are maintained between the European seaboard and Siberia, the former exchanging its moisture and mild temperature for the cold and bright skies of the latter.

In Northern Siberia the thermometer remains in winter below 20° Fahr., and even falls at times to 55° Fahr. On December 31st, 1871, the glass marked −69° Fahr. at Yeniseisk. During the three summer months the average is 59° Fahr.,

Fig. 171.—Climate of Yakutsk.



often exceeding 86° and occasionally 101° at Yakutsk, a greater heat than usually prevails some 2,000 miles nearer the equator. As in Lapland, the baked surface of the tundras is so hot as to be almost unendurable to pedestrians. Altogether the climate of Yakutsk, or rather of the Lower Lena basin, is the most typical on the globe of extreme or continental temperature.

Altitude compensating for latitude, the South Siberian highlands might at first sight be supposed to be as cold as the northern tundras. But such is not the case, and it has been shown that the higher we ascend towards the southern ranges the warmer it becomes. Thus up to a certain still undetermined point the tempera-

ture rises with the elevation of the land. Similar observations have been made in the Alps and Pyrenees; but what is the exception in Europe is the normal condition in East Siberia, where it is caused by the brightness and calmness of the atmosphere. The hot air radiates into space, while the cold and denser atmospheric strata sink with their weight to the surface of the earth. Thus all the meteorological conditions here combine to raise the temperature of the higher and diminish that of the lower strata. Relatively warm currents of air prevail in the upper regions above the cold air resting on the lowland plains, and on Mount Alibert (7,400 feet) the wind in winter sets steadily from the comparatively warm north-west, south-west, and west quarters. Such, combined with the dry climate, are the causes which prevent the formation of glaciers on the Daûrian, Aldan, and Stanovoi highlands. Even the mountains 2,000 to 3,000 feet high on the north coast, east of the Taimir peninsula, have but few snow-fields, and Nordenskjöld could not positively determine the presence of any real glaciers. These eminences fall short even of the snow-line, and in summer are quite free of snow, except perhaps where it is lodged in the deep ravines.

Travellers speak of the Siberian winters with mingled feelings of terror and rapture. An infinite silence broods over the land—all is buried in deep sleep; the animals hibernate in their dens, the streams have ceased to flow, disappearing beneath the ice and snow; the earth, of a dazzling whiteness in the centre of the landscape, but grey in the distance, nowhere offers a single object to arrest the gaze. The monotony of endless space is broken by no abrupt lines or vivid tints. The only contrast with the dull expanse of land is the everlasting azure sky, along which the sun creeps at a few degrees only above the horizon. In these intensely cold latitudes it rises and sets with hard outlines, unsoftened by the ruddy haze elsewhere encircling it on the edge of the horizon. Yet such is the strength of its rays that the snow melts on the housetop exposed to its glare, while in the shade the temperature is 40° to 50° below freezing point. At night, when the firmament is not aglow with the many-tinted lights and silent coruscations of the aurora borealis, the zodiacal light and the stars still shine with intense brightness. Probably no other region of the globe is so favourably circumstanced for astronomic observation. Here the atmosphere is absolutely pure, unsullied except perhaps on the river banks, whence rises a dense fog charged with icy particles, or in the neighbourhood of the vast herds shrouded in their vapoury exhalations. And man dares to face these tremendous frosts, while animals seek shelter in their lairs. The raven alone risks the open air with a feeble and slow flight, its wake marked by a slender hazy streak. Yet these Siberian winters are less unendurable than strangers might suppose. If well nourished, warmly clad, and wrapped in furs, they have nought to fear, for few climates are more healthy than that of East Siberia, with its perfectly dry, still, and pure atmosphere. No case of consumption has ever occurred at Chita, in the bleak Transbaikal province, where the mercury remains frozen for weeks together.

To this severe winter, which fissures the surface and rends the rocks of the rivers into regular basalt-like columns, there succeeds a sudden and delightful

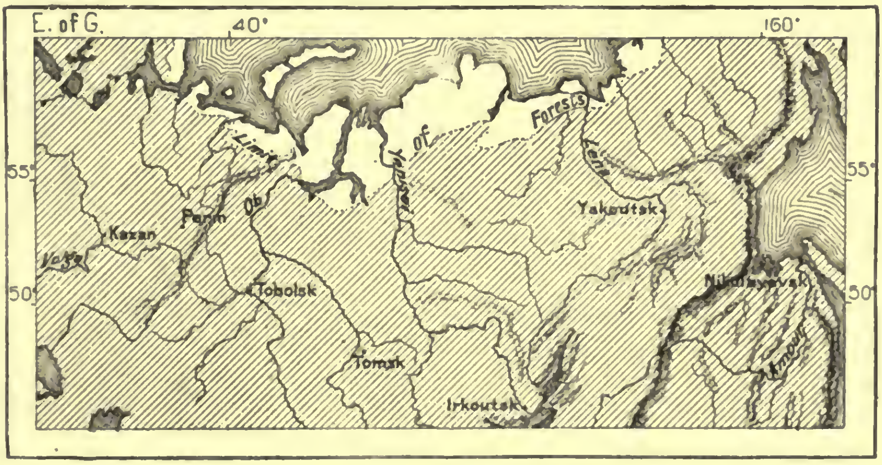
spring. So instantaneous is the change that nature seems as if taken by surprise and rudely awakened. The delicate green of the opening leaf, the fragrance of the budding flowers, the intoxicating balm of the atmosphere, the radiant brightness of the heavens, all combine to impart to mere existence a voluptuous gladness. To Siberians visiting the temperate climes of Western Europe spring seems to be unknown beyond their lands. But these first days of new life are followed by a chill, gusty, and changeful interval, arising from the atmospheric disturbances caused by the thawing of the vast snowy wastes. A relapse is then experienced analogous to that too often produced in England by late east winds. The apple blossom is now nipped by the night frosts falling in the latter part of May. Hence no apples can be had in East Siberia, although the summer heats are otherwise amply sufficient for the ripening of fruits. After the fleeting summer winter weather again soon sets in. It will often freeze at night in the middle of July; after the 10th of August the sear leaf begins to fall, and in a few days all are gone, except perhaps the foliage of the larch. The snow will even sometimes settle early in August on the still leafy branches, bending and breaking them with its weight.

Below the surface of the ground winter reigns uninterrupted even by the hottest summers. About the middle of the last century Gmelin revealed to science the astonishing fact that from about 6 or 7 feet from the surface to a depth of over 30 yards the ground remains permanently frozen. But this phenomenon was in seeming opposition to the normal increase of terrestrial temperature downwards, and it was asked how the frozen soil of Yakutsk could grow plants and ripen cereals. Hence Gmelin's statement was at first rejected; but it has since been fully confirmed by the observations of Erman and Middendorff. A boring of 385 feet deep through the sandstone of Yakutsk failed to penetrate beyond the congealed strata, and had to be abandoned before water could be reached. But the assertion that the ground in North Siberia is uniformly frozen to depths of from 450 to 500 feet cannot be accepted without more exhaustive observations. In some places, possibly from the presence of springs and other local causes, the uncongealed soil has been reached at depths of even 3 to 4 feet.

In winter the atmosphere is usually still in the zone of intensest cold; but not so in the surrounding regions. From the Urals to the Yenisei, and from the Sayan highlands to the Arctic Ocean, the south and especially the south-west winds prevail in winter, while farther south the Kirghiz and Astrakhan steppes are swept by polar winds. East and west of the Urals the atmospheric currents from the tropics and Arctic zone meet midway; but east of the Yenisei, and especially in the Lena basin, the direction is in winter generally from the north-west towards the Pacific. The Sea of Okhotsk is then lashed by fierce storms for months together. At Udskoi, near the coast, these furious monsoons blow steadily from the north-west from September to April, preventing all access to the Stanovoi highlands, and at sea deflecting the Kuro-sivo current and causing vessels to alter their course between the two continents. The same glacial north-west wind prevails also in the Amur basin and on the Mongolian plateaux, compelling travellers

and conductors of caravans going westward to protect their faces with felt masks from its fury. During the winter of 1878-9 Nordenskjöld and his associates found that it blew almost uninterruptedly along the shores of the Arctic Ocean, though not so violently as elsewhere. In summer also the polar winds are attracted to the Siberian seaboard by the rarefaction of the atmosphere on the heated tundras. But in the east the continent is during this season visited by east and south-east breezes from the Pacific, which are often felt as far inland as the Baikal basin, where they bring an abundant supply of moisture. The shores of the Sea of Okhotsk are then constantly overcast, and the Kurile waters enveloped for weeks together in dense fogs. Here the mean annual rainfall exceeds 40 inches, while in many places in the interior it scarcely amounts to 10 inches. In certain parts of South Siberia, and especially in the Transbaikalia, whole winters pass without any snowfall. Elsewhere, as in the Krasnoyarsk district, the plains

Fig. 172.—Northern Limit of Forest Vegetation.
Scale 1 : 35,000,000.



600 Miles.

are swept of their snows by the storms, and the autumn-sown corn dispersed by the winds.*

Under the action of the regular monsoons the snow is often disposed in parallel dunes succeeding each other like the ocean waves. During the long winter nights the Chukchis are able to guide themselves as with a compass by the direction of these *zastrugi*, which, however, have to be yearly renewed after their dispersion by the storms. The most dreaded of these storms are the *burans*, which rage in the midst of the plains like tropical hurricanes, sweeping with them snow, ice, gravel, branches, débris of every sort, and often man himself.

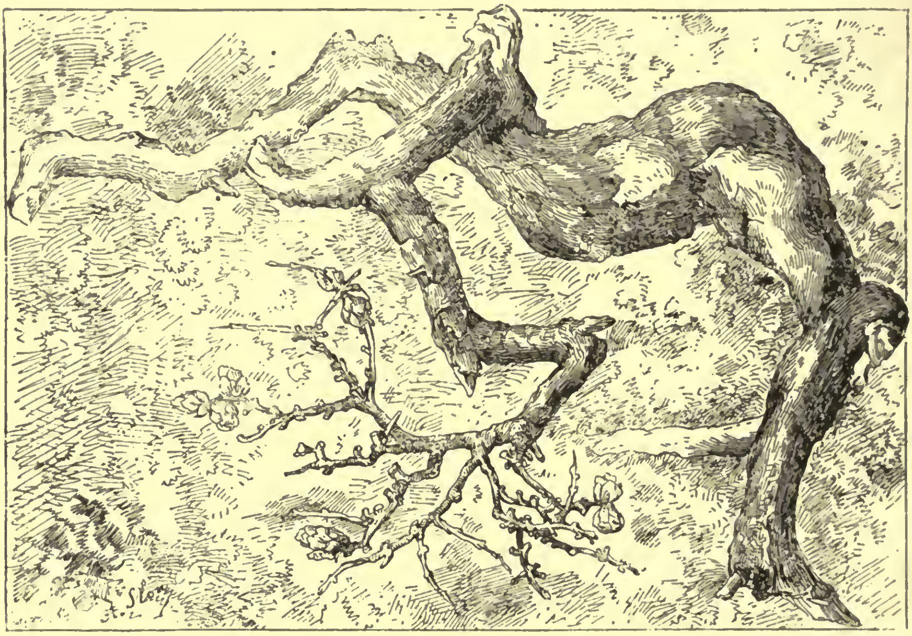
* Annual rainfall in Siberia :—

	Inches.		Inches.
Aryan (Sea of Okhotsk) . . .	36	Bernaûl	13
Yakutsk	10	Nerchinskiy-zavod	16
Kiakhta	8	Tobolsk	18

Flora.

With its vast extent and varied climate Siberia naturally embraces several vegetable zones, differing more from each other even than those of Europe. The southern steppes have a characteristic and well-marked flora, forming a continuation of that of the Aral, Caspian, and Volga plains. The treeless northern tundras also constitute a vegetable domain as sharply defined as the desert itself, while between these two zones of steppe and tundra the forest region of Europe stretches,

Fig. 173.—Trailing Larch 150 Years old: Quarter of the natural Size.



with many subdivisions, west and east right across the continent. Of these subdivisions the chief are those of the Ob, Yenisei, Lena, and Amur basins.

The northern limit of forest vegetation is generally drawn at too great a distance from the Frozen Ocean. In Siberia the tree line, everywhere formed by the larch (*Larix Daurica Sibirica*), so far from running east and west along the same parallel of latitude, is deflected northwards mainly with the coast-line. Thus it coincides in the Ob basin nearly with the Arctic Circle, crosses the Yenisei about 70° N. lat., and in the Taimir peninsula inclines along the banks of the Khatanga 170 miles still farther north. East of this point it gradually falls again towards the Polar Circle, so that the whole of the Bering peninsula is excluded from the forest zone. But long before reaching its extreme limits forest vegetation everywhere becomes dwarfed. Beyond the 60th parallel no trees occur with stems more than 4 feet thick, and beyond the 61st they scarcely average 12 or 14 inches, and near the tundra shrink to half a foot. From a distance the forests two or three hundred years old, consisting of such slender trees, look like fresh plantations.

The ground being frozen to within a short distance of the surface, prevents the roots from penetrating vertically in search of moisture, while for a great part of the year the superincumbent snows deprive the branches of all communication with the atmosphere. In winter trunk and roots alike remain completely frozen, hibernating, so to say, like the wild beasts, till the first warm days of spring. Its slow growth imparts to the fibre an extraordinary hardness, but the timber thus becomes less elastic and more brittle. The last struggling larches are unable to put forth true branches, throwing off nothing but a few hard, almost thorny, limbs and shoots. In this incessant struggle between life and death most of the few trees that approach the tundra soon lose all their sap. Moss-covered and branchless, they look like aged and dead trunks. Yet beyond these larches, which still stand erect, there come others which trail along the ground half hidden by their mossy mantles. Within 60 miles of the forest line these rampant species are met, which in one hundred and fifty years have scarcely grown 4 feet, and which look more like exposed roots than veritable trees.

Throughout North Siberia, as well as on the slopes of the southern highlands, abundant traces occur of a former forest zone reaching far beyond the present limits of timber. In some parts of the north the trees have retreated from 12 to 15 miles, a fact attributed rather to frequent summer frosts than to an increased intensity of cold in winter. Hence trees thrive perfectly well in the Lena basin, where the winter is most severe, but the summer less exposed to frosts. Still the climate of North Siberia, like that of other Arctic regions, has certainly increased in severity during the last few hundred years.

Beyond the forest zone stretch the tundras, where the only vegetation is herbage, mosses, and lichens. The tundra is not composed exclusively of low plains, but also comprises hilly districts, and on the whole is rather a rolling land, in which eminences rising 300 feet above the plains follow each other beyond the horizon like the ocean waves. Although of different origin, the tundra in many respects resembles the steppe. The latter is produced by lack of moisture, the former by lack of heat. But both alike have the same cheerless aspect, and produce the same mournful impression on the mind. The species of plants growing along the Arctic seaboard are found also on the shores of the Ural Sea, 30° farther south. In the peninsula of Taimir alone there are no less than ten genera and twenty-one species of phanerogamous plants. Still the mosses prevail, and for vast spaces seem to occupy the field to the exclusion of all other types. Where the *polytrichum* predominates the tundras are of a dirty yellow; where the reindeer moss forms the chief element they assume a faded white hue. The monotony of these dull white or yellow expanses is broken only here and there by a patch of green herbage, marking the site of some abandoned Samoyede camp, or the lair of an Arctic fox. A few "trembling" pasture lands also occur, but as a rule only near running waters.

Between the northern tundras and southern steppes by far the greatest space is occupied by the forest zone. From the Urals to Kamchatka the dense *taiga*, or woodlands, are interrupted only by the streams, a few natural glades, and some

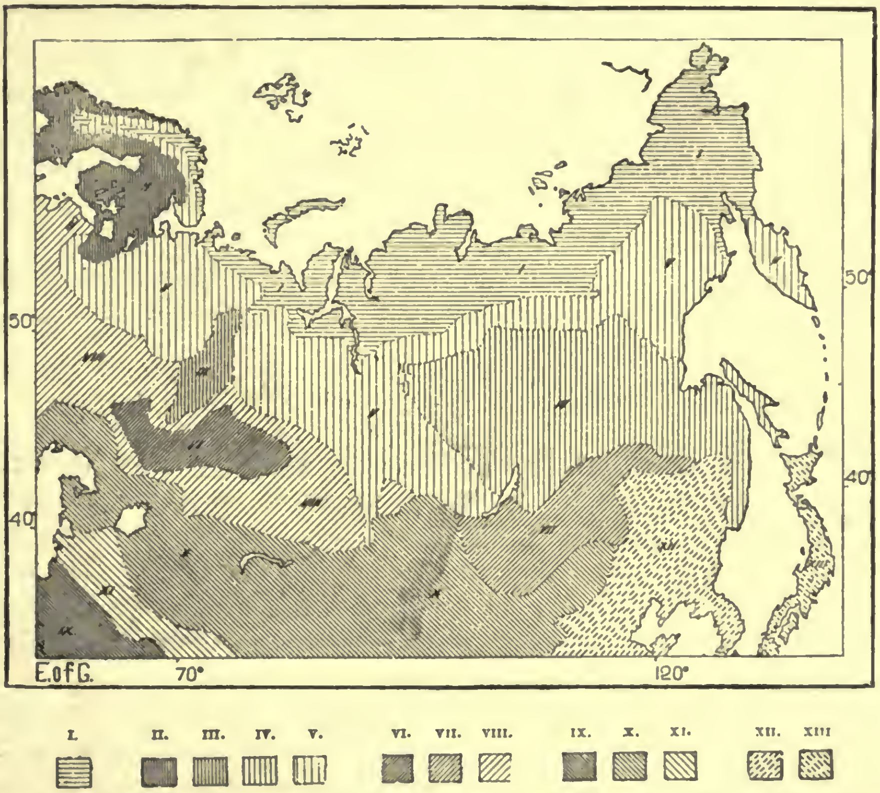
Fig. 174.—Larch Forest on the Boganida, a Tributary of the Katanga.

tracts under cultivation. The term *taiga* is used in a general way for all lands under timber, but east of the Altaï it is applied more especially to the moist and spongy regions overgrown with tangled roots and thickets, where the *mari*, or

peat bogs, and marshes alternate with the *padi*, or narrow ravines. The miners call by this name the wooded mountains where they go in search of auriferous sands. But everywhere the taiga is the same dreary forest, without grass, birds, or insects, gloomy and lifeless, and noiseless but for the soughing of the wind and crackling of the branches.

The conifers are the prevailing trees, and these comprise all the species common to Europe, besides the *Pinus pichta*, peculiar to East Siberia. This species is very tall and slender, about 90 feet high, and seldom over 10 inches in diameter, with

Fig. 175.—Range of Animal Species in North Asia.
According to Severtzov. Scale 1 : 42,750,000.



I. Arctic Zone.—Northern Zone. *Regions:* II. North-European; III. Uralo-Siberian; IV. East Siberian; V. Intermediate.—Middle Zone. *Regions:* VI. Uralo-Barabian; VII. Daûrian; VIII. Intermediate.—Desert Zone. *Regions:* IX. West Asiatic; X. Central Asiatic; XI. Intermediate.—Seric Zone. *Regions:* XII. North China; XIII. Japan.

600 Miles.

smooth bark, and in the large central forests noted for its bluish-green foliage. Though a noble plant, it is of but slight economic value, being too fragile for building purposes, and not very useful even as fuel. The so-called "Siberian Cedar" (*Pinus cembra*) is in every respect the best and most used for furniture, wearing well, and never rotting unless exposed to sudden changes of temperature.

The most common tree in the taiga is the larch, which best resists the winter frost and summer chills. The various species range from the extreme limits of forest vegetation to the Upper Ussuri basin, in South Siberia. But the Siberian

woodlands also include most of the trees common to temperate Europe—the linden, alder, juniper, service, willow, aspen, poplar, birch, cherry, apricot—whose areas are regulated according to the nature of the soil, the elevation or aspect of the land. Towards the south-east, on the Chinese frontier, the birch is encroaching on the indigenous species, and the natives regard this as a sure prognostic of the approaching rule of the "white Czar."

Conflagrations are very frequent in the Siberian forests, caused either by lightning, the woodmen, or hunters, and sometimes spreading over vast spaces till arrested by rivers, lakes, or morasses. One of the pleasures of Siberian travelling is the faint odour of the woods burning in the distance.

The native flora is extremely rich in berries of every kind, supplying food for men and animals. Collected in vast quantities in the neighbourhood of the towns, they are used in the preparation of preserves and liqueurs, which partly replace fruits in the native diet. Poisonous plants are rare, and disappear altogether in the north. Some cultivated species have been introduced even into the tundra and all the camping grounds along the Arctic seaboard. The soil of this region spontaneously produces various anti-scorbutics, and the so-called "water plums," an edible gelatinous substance, may be collected in abundance in all fresh-water basins. Thus, as Von Baer remarks, in the tropics man gathers his food from the trees, in the temperate zone from the soil, in the polar regions from the water.

Fauna.

The natural limits of the land fauna coincide with those of forest vegetation in the neighbourhood of the Arctic Ocean. Still the mouse and other rodents, preyed on by the white bear in summer, reach beyond the tree line into the tundra. South of this line stretches the zone of the European species, gradually modified as they proceed eastwards. The steppes and the Daûrian highlands occupy the southern region, while towards the south-east a portion of the Amur basin and all Russian Manchuria belong already to the Chinese domain.

Within a recent geological epoch Siberia was still inhabited by a large species of rhinoceros, and by the mammoth, an elephant larger and stronger than any now existing. These monsters also roamed over the plains and forests of Europe, where, as in Siberia, they were the contemporaries of man. But in Europe they are now represented only by fragments of their skeletons, whereas in North Asia their very carcasses have been found still covered with the flesh and hides. In 1771 Pallas assisted at the removal of a rhinoceros from the banks of the Lower Vilin, west of Yakutsk. Portions of the head and feet are still preserved in St. Petersburg, together with similar remains found in 1877 on the Bitantai, near the Yana. In 1799 a frozen mass floating down the Lena grounded near the mouth of the river where it released the body of a mammoth as it gradually melted from summer to summer. When found by the naturalist Adams the native Tunguses had already carried off the tusks, but the eyes, brain, and much of the flesh still remained, and the skeleton is now in the St. Petersburg Museum. A second mammoth, now in

the Moscow Museum, was discovered in 1839, and a third was brought to light in 1866 by Schmidt near the estuary of the Taz. The "ivory hunters" have long been in the habit of visiting the Arctic seaboard and the archipelago of New Siberia in search of mammoths, and such was formerly the abundance of these animals that the annual yield of fossil ivory amounted to 40,000 lbs. In 1840 Middendorff calculated that up to that time the remains of about 20,000 mammoths had been discovered about the Siberian river banks.

Whether the climate of the country was warmer when these animals flourished than at present is a moot question with geologists. Being covered with long hair, the mammoth could certainly endure the rigours of a Siberian winter. But in the tundras and along the shores of the Frozen Ocean, now strewn with his tusks, he could not have found the foliage necessary for his sustenance. Are we then to conclude that the country was at that time wooded, or rather that the real home of the mammoth was South Siberia, whence his remains drifted with the streams northwards? Various traditions associated with these animals have been diffused throughout Siberia and China. In the Chinese annals mention is made of the *mamentova*, a rat as large as an elephant, burrowing underground, and suddenly killed by contact with the air. The Samoyedes say that the mammoth still exists, haunting the streams and coast, and living on the dead bodies cast up by the waves. They speak of the rhinoceros as a gigantic bird, whose talons were the tusks purchased by the ivory hunters. Their legends also describe the terrific combats that formerly took place between their forefathers and these birds. A microscopic examination of the vegetable remains adhering to the molars of the rhinoceros in the Irkutsk Museum has revealed the fibres of the larch, birch, willow, closely allied to, if not identical with, the species still growing in northern latitudes. The opinion is thus confirmed that these pachydermata lived in the middle zone, south of the extreme limits of the northern regions where their remains are now found.

These remains are often found associated with those of the horse, ox, and sheep; but the same gradual evolution has taken place in Siberia as in Europe, and all these species have been similarly modified. The extreme eastern regions of the Amur basin and Russian Manchuria, being warmer, more humid and fertile, also abound more in animal life than the other parts of Asiatic Russia. On the other hand, the Siberian bear, deer, roebuck, hare, squirrel, marmot, and mole are about one-third larger, and often half as heavy again as their European congeners. This is doubtless due partly to the greater abundance of nourishment along the rivers and shores of Siberia, and partly to the fact that for ages the western species have been more preyed upon by man, living in a constant state of fear, and mostly perishing before attaining their full development.

The Arctic Seas abound probably as much as the Pacific Ocean with marine animals. Nordenskjöld found the Siberian waters very rich in molluscs and other lower organisms, implying a corresponding abundance of larger animals. Hence fishing, perhaps more than navigation, will be the future industry of the Siberian coast populations. Cetacea, fishes, molluscs, and other marine organisms are cast up

in such quantities along both sides of Bering Strait that the bears and other omnivorous creatures have here become very choice as to their food. But on some parts of the coast in the Chukchi country whales are never stranded, and since the arrival of the Russians certain species threaten to disappear altogether. The *Rhytina stelleri*, a species of walrus formerly frequenting Bering Strait in millions, was completely exterminated between the years 1741—68. Many of the fur-bearing animals, which attracted the Cossacks from the Urals to the Sea of Okhotsk, and which were the true cause of the conquest of Siberia, have become extremely rare. Their skins are distinguished, above all others, for their great softness, warmth, lightness, and bright colours. The more Alpine or continental the climate, the more beautiful and highly prized become the furs, which diminish in gloss towards the coast and in West Siberia, where the south-west winds prevail. The sables of the North Urals are of small value, while those of the Upper Lena, 15° farther south, are worth a king's ransom. Many species assume a white coat in winter, whereby they are difficult to be distinguished from the surrounding snows. Amongst these are the polar hare and fox, the ermine, the campagnol, often even the wolf and reindeer, besides the owl, yellow-hammer, and some other birds. Those which retain their brown or black colour are mostly such as do not show themselves in winter. The fur of the squirrels also varies with the surrounding foliage, those of the pine forests being ruddy, those of the cedar, taiga, and firs inclining to brown, and all varying in intensity of colour with that of the vegetation.

Other species besides the peltry-bearing animals have diminished in numbers since the arrival of the Russian hunters. The reindeer, which frequented the South Siberian highlands, and whose domain encroached on that of the camel, is now found only in the domestic state amongst the Soyotes of the Upper Yenisei, and is met with in the wild state only in the dwarf forests and tundras of the far north. The argali has withdrawn to Mongolia from the Siberian mountains and plains, where he was still very common at the end of the last century. On the other hand, cold and want of food yearly drive great numbers of antelopes and wild horses from the Gobi steppes towards the Siberian lowlands, tigers, wolves, and other beasts of prey following in their track, and returning with them in the early spring. Brute creation seems well acquainted with the political frontiers of the two regions, and many birds, which in Siberia start at the least sound, allow themselves to be approached without betraying any symptoms of fear in Mongolia. This is specially the case with water-fowl, which the Mongolian nomads never dare to attack in the "sacred element." For the universal belief prevails that "should the blood of a bird mingle with the pure stream, it becomes fatal to all the flock drinking of it."

Hitherto the hand of man seems to have made no impression on certain sociable animals numerous in various parts of South Siberia. The Irtish, Yenisei, and Transbaikal steppes are honey-combed with galleries expanding to underground cities, wherever the soil is at once sandy and consistent enough to resist sudden changes of temperature. Such districts are peopled by the burrowing tribes, and

the surface is often covered for miles with regular mounds thrown up by millions of troglodytes from their endless subterranean labyrinths. Here it is the Tarbagan marmot (*Arctomys bobac*), there the whistling hare (*Lagomys agostonans*), elsewhere the mole or other creatures with similar habits. In the cool of the evening every hillock is occupied by some little rodent erect on its hind legs, surveying the surrounding landscape, suddenly disappearing at the least noise, and as suddenly reappearing to ascertain the cause of its fright. The lines of tarbagans mounting guard at their palace gates sometimes stretch beyond the horizon, like the sentinels of a countless army. Colonies of these marmots also people some of the treeless Kamchatka, Baikal, and Vitim highlands beyond the forest zone, having probably crossed the intervening wooded tracts before they were covered with timber.

Several new species of animals have been introduced by man, and modified by crossings in the domestic state. In the north the Samoyedes, Chukchis, and Kamchadales have the reindeer and dog, while the horse and ox are everywhere the companions of man in the peopled regions of Siberia. The yak has been tamed by the Soyotes of the Upper Yenisei, and the camel, typical of a distinctly Eastern civilisation, follows the nomads of the Kirghiz and Mongolian steppes. All these domesticated animals seem to have acquired special qualities and habits from the various indigenous or Russian peoples of Siberia. The Samoyede dog differs as much from the Cossack as the latter does fiom the Manchu species.

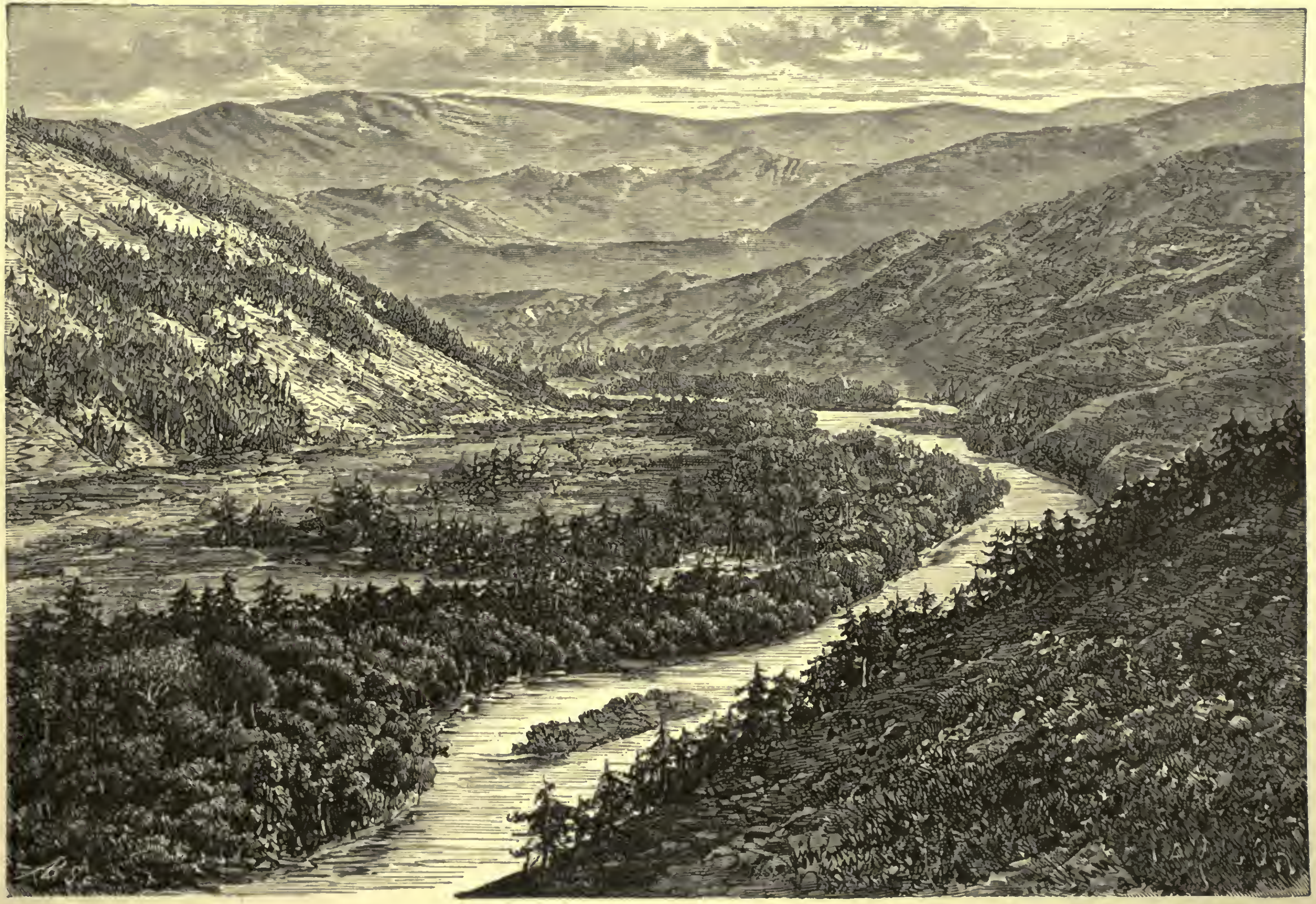
Inhabitants—The Chûdes.

All the local traditions, confirmed by many objects found in the old burial-places, speak of civilised peoples formerly occupying Siberia, and collectively known as Chûdes, whether of Aryan, Tûrki, Finnish, or Mongol stock. Their kurgans, or barrows, abound on the eastern slopes of the Urals, in the Altaï valleys, on the banks of the Yenisei, and especially in the Minusinsk district. In the mineral regions abandoned excavations are usually known as "Chûde mines." On the western spurs of the Altaï certain stone landmarks about 5 or 6 feet high, and inscribed with still undeciphered characters, are regarded by the present inhabitants as the "limits" of the Chûdes; and on the banks of a sacred lake in the Altaï highlands are to be seen two rudely carved granite horsemen, supposed to be the "gods" of the same mysterious people. Various objects, and especially arms and copper armour, found under the peat and along the rivers where gold was formerly washed, show that they were possessed both of taste and great skill in metal-working. The remains of canals several miles long, the foundations of sluices and windmills, bespeak a really advanced state of civilisation, which cultivated fruit trees that have since perished, and which reared an excellent breed of swine still bearing the name of "Chûde," and traditionally attributed to these ancient possessors of the land. The chief centre of their civilisation seems to have been in the highlands about the Yenisei, where the richest and most artistic objects have been found. The implements and arms occurring in the kurgans of the Western Altaï and Irtish valley are of a rude type and less original in design.

On the other hand, the "Chûde" antiquities of the Altaï betray a great resemblance to many "Scythian" objects from the Dnieper and Euxine districts. The civilised Chûdes, who are generally believed to have been of Finnish stock, were in all probability exterminated during the long wars which preceded the barbaric migrations. The Mongols, by whom they have been replaced, recognise their own foreign origin—when asked whence they came, pointing invariably to the south-east.

But although the Chûdes as a nation have vanished, they still doubtless survive, intermingled with the indigenous semi-barbarous populations, themselves destined either to merge with or disappear before the Russians. Although their dialects enable us still to group the various Siberian peoples, there can be no doubt that there has been a great mixture of races in this region. From the Urals to the Corean frontier a gradual transition of types may be traced, while isolated groups everywhere occur, which may be regarded as representing Mongol or Tûrki tribes dwelling thousands of miles off. The Mongol type is most pronounced in the women. Even in North-west Siberia we frequently see young girls with almost Chinese features. Intermixture has been much promoted by the usages of the Siberian nomads. Enforced displacements of whole tribes often remove them from the parent stock, and bring them into contact with other races. In their long journeys across large tracts of the continent the Yakut or Buriat traders purchase their wives, now in one, now in another tribe, and not unfrequently maintain separate "establishments" in the various countries visited by them. The wives are also let out on hire, the children sold to strangers, orphans adopted by strange tribes or by the Russian settlers and traders. Although the Slav type, especially amongst the Little Russians and Raskolniks, has been perfectly preserved in some settlements, a general fusion of all the Siberian peoples is gradually taking place. While the Russian emigrants become assimilated to the Yakuts, many Tunguses are being slowly Russified. According to the relative importance of the elements in contact, the features and habits of one or other approach the prevailing type. Thus the Finns and Turks of the west have acquired a European appearance, while in the east preserving their Asiatic features.

Throughout Siberia proper, from the Urals to the Pacific, the Russians, either pure or sprung of Cossack alliances with the native women, have already become the most important element both numerically and socially. The Siberian Slavs number over 3,000,000, and those of the Ural districts over 4,000,000, while the scattered native tribes cannot be estimated at much more than 700,000, exclusive of the Kirghiz, whose steppes are now administratively included in "Central Asia." Some groups occupying a domain larger than France consist only of a few nomad families receding before the foreign settlers. The Russians hold in compact masses the eastern slopes of the Urals, and the Tobol, Irtish, and Upper Ob basins. They are also predominant in the Yenisei and Angara valleys and in Transbaikalia, and have occupied all the arable tracts along the river banks. Since 1865 they have been spreading over the fertile Altaï valleys, which were in that year thrown open to free immigration.



BUKHTARMA VALLEY, ALTAÏ HIGHLANDS.

II.—THE ALTAÏ HIGHLANDS.

The "Gold Mountains," as the name probably means, from the Mongol *Al-tin*, synonymous with the Chinese Gin-shan, comprise the whole system of highlands rising north of the Zungarian depressions, and forming an eastward continuation of the Tian-shan and Pamir. Although far less extensive and elevated than the Tian-shan, the Altaï still bears comparison with the European Alps, if not in the height of its peaks, diversity of its forms, abundance of its snow or rich vegetation, at least in the development of its ranges and length of its valleys. The Altaï proper doubtless comprises, on Russian territory, the snowy region alone, which is limited on the west by the valley of the Black Irtish, and eastwards by the Sûok Pass. But this much-frequented pass, on the Russo-Chinese frontier, is a purely conventional limit, for the system still stretches eastward, under the name of the Sayan range, as far as the Yenisei, and beyond it to the Baikal uplands. In the direction of China the Altaï is continued in a system of little-known chains and spurs far south of the sources of the Yenisei and to a considerable distance into the Mongolian plateaux. At the same time the term is employed somewhat vaguely in Siberia, being often applied not only to the hills, but also to the plains at their feet, and in fact to the whole region depending administratively on Barnaûl, Biisk, and Kuznetzk.

When the Altaï is approached by the great South Siberian route from the Urals, nothing is visible except irregular hills, bare and forbidding as the steppe itself. Beyond the scattered forests and lakes of the plains little is met but grey and arid tracts, the horizon being limited south and east by a sky-line of low and formless mountains, concealing from view the more elevated summits on the Chinese frontier. The prevailing nakedness of the rocks is relieved by a few verdant crests, but in the Western Altaï regions the landscape is mostly of an extremely desolate character. The south-west winds, bearing moisture across Europe to the Urals and western slopes of the Tian-shan, are completely exhausted before reaching the Altaï. Their humidity comes altogether with the cold north-east winds, which in many places clothe them with rich pastures. In the Urgudei valley, north of the Sayan, few days pass without rain or snow falling according to the season.

In these moist regions the running streams and woodlands impart to the mountain scenery quite a different character from that of the bleak western highlands. Wherever the crags and rugged heights assume large proportions, the landscape recalls that of the European Alps. A gorge of the Upper Chuya, leading towards the Sûok Pass between Biisk and Mongolia, is a sort of "Via Mala" in the contrast of the upper vegetation with the gloomy abyss at the bottom of which rushes the foaming torrent. But in the heart of the highlands the upper basin of the Chuya is a bare steppe seldom watered by the rains, and where the light winter snows are soon brushed aside by the winds. In several districts the Alpine region is sharply defined by the crest forming the dividing line between

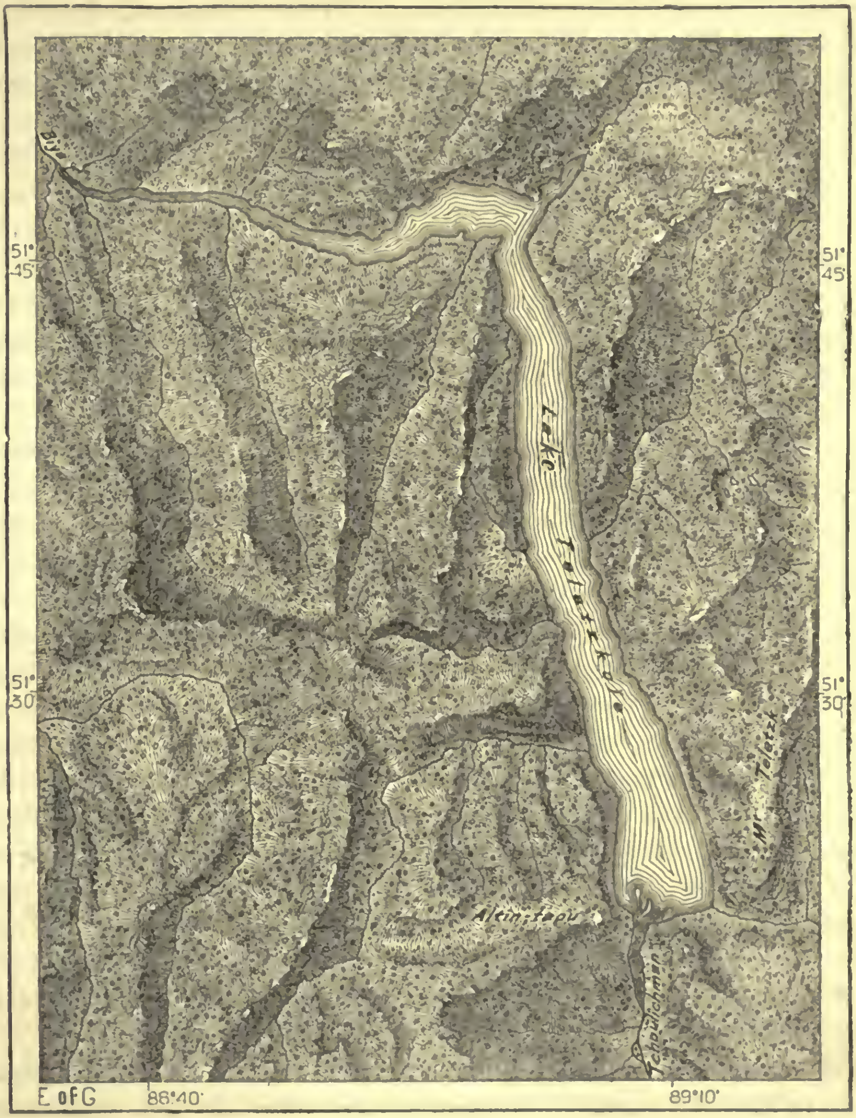
Fig. 176.—The Chindagutûi, a Tributary of the Irtish, Province of Semipalatinsk.

Russia and China. On either side of this line the contrast is complete, the northern slopes being clothed with forests of conifers, while southwards the rocky wilderness stretches beyond the horizon. The waters escape on both sides in opposite directions,

and the inhabitants belong to distinct ethnical groups—Mongols on the Chinese, Telenguts or Kalmuks on the Russian slopes.

The Altaï system consists of numerous chains running mainly west-north-west and east-south-east parallel with the Tarbagatai and many other Central Asiatic

Fig. 177.—Lake Teletzkoye.
Scale 1 : 200,000.



3 Miles.

ridges. These *Byelki*, or "Alps," are connected by irregular transverse ridges and plateaux, forming collectively a winding north-easterly watershed between the Ob basin and the Gobi desert. The Altaï, however, does not form a complete water-parting, for the Ulungur, a head-stream of the Irtish, rises in the Gobi, making its

way thence northwards round the western highlands. The whole system, including the intermediate valleys and southern plateaux, has a mean elevation of scarcely more than from 4,000 to 5,000 feet, though the chief crests rise to from 6,000 to 9,000 feet. The Ulan-dabas, forming the central nucleus, whence flow northwards several affluents of the Katun, westwards the Bukhtarma, southwards the Oïgur, a tributary of the Ike-eral, is intersected by a pass which, according to Miroshnichenko, is no less than 9,400 feet high. North-west of this formidable pass the Altaï system culminates with the Bielukha, or "White" Mountain, whose two peaks are each about 11,100 feet high. The highland mass commanded by this mountain is completely severed from the rest of the Altaï on the south, west, and north by the Katun, or Katuniya, which is the true Upper Ob. It receives numerous head-streams, one of which, the Kok-su, flows eastwards through the narrow fissure of the Korgon plateau, about 6,500 feet high. The Bielukha or Katun Mountains have the best claim to the title of the "Great Altaï," usually given to the still little-known region of the Mongolian Altaï. The "Great Altaï" of most geographers is called the "Little Altaï" by Venyukov. It forms the western frontier chain of the Kobdo plateau, whose escarpments slope south-westwards to the Ulungur and Black Irtish valleys. Several of its summits rise above the line of perpetual snow.

East of the Russian Altaï, whose various sections are usually named from their chief rivers or nearest villages, the Tannu-ola range runs in Mongolia between the Yenisei head-streams and the waters flowing towards the Ubsa-nor. Farther north the wooded Sayan Mountains sweep in a bold curve towards the Yenisei, above which they terminate with the Shabin-dabag. The lower Kuznetzkiy Ala-tau ridges, forming the water-parting between the Ob and the Yenisei basins, still maintain an elevation of from 4,000 to 5,000 feet. Several small lakes are dotted over the highland region where the Altaï and Sayan converge. But the largest and finest lacustrine basin in the Altaï regions is Lake Teletzkoye, fed by the Chulîshman, and draining through the Biya westwards to the Ob. In the beauty of its scenery this basin resembles Lake Geneva, and, like it, consists of two divisions, but more abruptly disposed. It stands at an altitude of 1,600 feet, and has an area of 110 square miles, with a depth of about 140 fathoms. At its southern extremity rises the snowy Altin-tau, or "Gold Mountain," a sacred spot in the eyes of the Kalmuks, who call it the "Father of the Mountains and Lake," and pretend that it has always punished with death the profane adventurers who have dared to scale its heights.

The Bielukha also, as indicated by its name, rises above the snow-line, and even develops a glacier about 2,800 yards long, whence flow the first head-streams of the Katun. A few limited snow-fields descend from the neighbouring mountains, remnants of the extensive glaciers that formerly covered these highlands. The snow-line on the slopes of the Altin-tau, recently fixed at about 7,500 feet, has now been raised to 8,600 feet; yet it still remains at a lower elevation than the corresponding line on the Alps and Pyrenees.

The heights below the snow-line are partly covered with marshy tracts strewn

with granite boulders. These heights, flattened on top, but with very steep sides, are separated by deep valleys, which seem to have been hollowed out by erosion in the softer schistose rocks embedded in the granite masses, of which the Altaï system is mainly composed. Some porphyries and serpentines have here and there intruded in the crystalline and schist formations; but there are nowhere any evidences of volcanic action. The Altaï is evidently a very ancient system, without any of the dyassic, triassic, Jurassic, chalk, or tertiary strata. Since the formation of the palæozoic rocks, its crests have always been raised above the seas and lower steppes. The coal-fields discovered in the Kuznetzk Mountains, on the banks of the Tom, and the rich metalliferous veins, which have given such economic importance to the Altaï region, date from these geological epochs.

Flora and Fauna of the Altaï.

Compared with that of the surrounding steppes, the flora of the Altaï is extremely rich, though still inferior to that of Central Europe in the number of its species. Ledebour, who has collected about 1,600 flowering plants in this region, estimates at about four-sevenths of the species indigenous in Germany those composing the wild flora of the Altaï, which lies under the same latitude as the Bohemian highlands, and is exposed to the same alternating south-west and north-east winds. All the families, except those growing on the shores of salt lakes, are represented in the Altaï by fewer species than in Central Europe. The maple is wanting altogether, the lime-tree occurs only in isolated clusters, and the alder is very rare. On the other hand, there are some peculiar species, such as the hedge cherry (*Lonicera Tatarica*) and the pea-tree (*Caragana arborescens*), whose whitish and acacia-like foliage is seen on most of the less productive slopes.

The steppe flora encroaches on the Altaï flora proper to a height of about 1,000 feet along the advancing spurs. It is very poor, especially in the saline tracts, and imparts a grey or yellowish tone to the landscape, here and there relieved by pale green tints. Grassy lands occur only on the well-watered low-lying flats, and this tall herbage, heaving like the waves under the action of the winds, is said to produce something like the effect of sea-sickness on the natives accustomed to the sombre motionless aspect of the bare steppe. Along the river banks the steppe flora is interrupted by arborescent vegetation, including the birch and other rapidly growing species, and occasionally the pine, where it has not escaped the conflagrations it is exposed to in the neighbourhood of human habitations. Of the poplars and willows, abounding most in the rivers rising in the Altaï, some species seem to have originated in the Upper Ob basin.

The black birch and medlar reach an altitude of 6,800 feet, whereas the forest zone proper is comprised between 4,300 and 6,600 feet. But in all the inhabited districts it has been considerably encroached upon by the woodman's axe, and in some places nothing but saplings are met for hundreds of square miles. In the valleys sheltered from the dry south-west winds, and at a distance from the mining districts, the pine "taiga" are still met, and higher up forests of firs and other

conifers finer than those of Europe, owing to the richness and variety of the undergrowth. The Alpine plants, reaching from the forest zone to the snow-line, are noted for their bright colours and pungent odour. They are intermingled first with the last stunted growth of dwarf trees, and then with the mosses and lichens, which finally disappear under the snows.

The mountain fauna, like the flora, is relatively very rich, and the Kalmuk sings, "The White Altaï, with its four valleys and six, of sixty birds is the home, and of countless deer." In the section explored by him, Ledebour collected twenty-one species of mammals, sixty-four of birds, twenty-eight of amphibia, but seven only of fish. On the Chinese frontier there are some animals belonging to the Central Asiatic fauna; but on the whole the species are the same as those of the Tian-shan and Siberia. The stuffed tigers in the Barnaûl Museum were intruders from a foreign domain, and do not seem to have been here indigenous. Some animals, formerly very common, have either disappeared or become very scarce. Such are the beaver, now found only on the Black Irtish, and the elk, so numerous in the time of Pallas that the tribute was often paid with its skins, valued at about half a rouble each. But while some have been exterminated by the hunter, others have been introduced by the Russian and Tatar peasants. The Russians of the Bukhtarma valley have succeeded in taming, and thus preserving, the marali, which has elsewhere been nearly extirpated by the less provident settlers. This ruminant is more valued than the horse, because of its greater docility, and because it consumes less hay, if supplied with plenty of salt. The horns of the male are sawn in spring, yielding on an average about £8 worth of the gelatinous substance so highly prized by the Chinese. The skin and flesh have also a great economic value.

The bee, said by Ledebour to have been introduced by the Russians towards the close of last century, seems to be indigenous, at least in the region of Lake Teletzkoye, where it is found in the wild state, and has a native name. In any case agriculture has become one of the great industries of the Altaï, and as many as 2,000 hives are grouped around some farmsteads. In several villages the annual yield amounts to 125,000 lbs. of honey, and 500,000 lbs. of honey and 825,000 lbs. of wax are yearly exported from the Bukhtarma valley. This highly perfumed honey is largely consumed in the Altaï regions, where, as in Russia, it is eaten with candied fruits and cucumbers.

Inhabitants—The Kalmuks, Tatars, and Russians.

The prehistoric races of the Altaï have left traces of their civilisation, and the local mines had from the remotest times been worked by one of those mysterious races known as "Chûdes." The hills and plains are strewn with their barrows, generally surrounded with stones and gooseberry thickets. When the Russians discovered the rich mineral treasures of the Altaï, they found that mines had everywhere been opened, and Pallas tells us that in one of them the skeleton was found of one of those prehistoric miners, with a leather sack full of ores by his side.

In many places the honey-combed ground has given way, forming large basins, now partly filled with water. In the agricultural districts also human skeletons have been found beneath the "black earth," associated with the remains of horses, and delicately wrought gold, silver, copper, and iron objects. These ancient miners of the Altaï and Yenisei, as well as those of the Urals, were amongst the ancestors of the debased populations occupying the Altai valleys at the time of the arrival of the Russians, and who belonged to the Ural-Altaic stock. Owing to the common tendency to seek the cradle of races in highland regions, the terms Ural and Altai, like that of the Caucasus, have been employed to designate the various Tatar, Finnish, and even Mongolian nations of North Asia.

The Mongols occupy all the southern slopes of the Altaï and surrounding plateaux. But they have also crossed the frontier, and dwell in the midst of the Russians and Tatars of the northern valleys, though they are here chiefly represented by the Kalmuks, variously estimated at from 12,000 to 20,000. These communities, who call themselves Telingit, or Telengut, and some of whom are even ignorant of the name of Kalmuk, are described as "the most honest of Asiatic peoples." The Teletzes of the Chulîshman valley, from whom Lake Teletzkoye takes its name, form a "family of brothers," far superior to their more "civilised" conquerors in simplicity, uprightness, and hospitality. Till recently they were subjects both of China and Russia, knowing no political frontier, and paying tribute to two masters. But since 1869 their allegiance has been confined to the White Czar. They formerly occupied a far more extensive territory, stretching even beyond the Irtish; but they are now limited to the Biisk and Kuznetzk districts of the Eastern Altaï. Although of Mongol stock, they now speak a Tûrki dialect, abounding in Mongolian terms.

The Altaï Kalmuks are pure Shamanists, freely practising their rites, and on grand occasions sacrificing animals. Their idols or symbolic images consist of blocks of wood or bark representing men with outstretched arms, not unlike the votive offerings often lining the walls of churches in the south of Europe. These many-coloured images represent the good and bad spirits, who dwell between heaven and earth, in the mountains and at the bottom of the lakes. Hare-skins, regarded by the Orthodox Russians as impure, are sacred objects in the eyes of the Kalmuks, who spread them over wooden crosses, also revered as holy symbols. The ghosts of their forefathers are represented by party-coloured ribbons attached to the branches or streaming from poles, and every Kalmuk knows his ribbon by the name of one of his ancestors. He understands the language of the wind, listens to its advice, but never reveals to strangers what the voice from beyond the grave has told him. Nevertheless thousands of these Shamanist Kalmuks are officially classed as Christians. The harsh treatment of their wives is said to be one of the chief causes of the conversions amongst the frontier populations. To escape from the blows of their husbands these women take refuge with the missionary, and allow themselves to be baptized. Then the husbands come forward and cause themselves also to be baptized, in order to recover possession of their spouses, and thus two souls are gained to the "true faith." Most of the Tatars in

the Russian valleys are also baptized and officially regarded as Christians, although they are really Shamanists, and have often forgotten their Christian names, still calling themselves "Dog," "Wolf," "Raven," "Vulture," after the national fashion. The chief missionary station in the Altaï regions is Ulula, a village in the Upper Katun valley, some 60 miles above Biisk. Here is a curious collection of native documents, religious works published in Tatar, and popular songs collected by Radlov and Chivalkov.

Of all the non-Slav races the Tatars are, on the whole, those who offer the greatest inert resistance to the progress of Russian civilising influences. Yet of many Tatar tribes little now survives beyond their names. The Kirghiz of the Upper Katun valley, completely isolated from their kinsmen of the western steppes, have become Russians in their agricultural habits, though still speaking Tûrki or the Mongolian dialect of their Kalmuk neighbours. The Teleuts of the Biya valley, and the Kumandes, besides various groups of "Black" Tatars, are also being gradually Russified. Helmersen and Radlov think the Teleuts are of Finnish race, although now speaking a Tûrki dialect resembling that of the Telenguts.

Over nine-tenths of the population in the Altaï regions are Russians, descended from traders, officials, Cossacks, miners, soldiers, and exiles. Till 1865 the Russian peasantry were not permitted to colonise these highlands, which were the special domain of the Czar, reserved for the mining industry. Still the valleys are so fertile, and the demand for agricultural produce so urgent, that thousands settled here even before that year. The Raskolniks especially possess several large villages, surrounded by flourishing farms, and they already form about one-fifteenth part of the entire population. At present colonisation is making rapid strides, and numerous new communes have been founded in the Biisk district, and even in the Kalmuk territory. Some of the better class of villages belong to the descendants of fugitives said to have been criminals, but who must have mostly been Bezpopovtzi Raskolniks, all the inhabitants now belonging to that sect of Old Believers. They retreated before the advance of the miners, and formerly lived like savages in the more inaccessible valleys, some penetrating even into the Mongolian steppes, where they are believed still to survive. These were the so-called Kamenshiki, or "Rock People," most of whom accepted the Czar's authority in 1791, and built regular villages, where their descendants now lead honest, sober, and industrious lives. But in 1862 about fifty of them quitted the country in search of the mysterious "White Water," probably the Lob-nor, where Prjevalsky heard of an independent Russian community during his recent travels.

Formerly the only advantage derived by the Russians from the Altaï regions was due to the mines, all of which were discovered on the site of old "Chûde" works. Since the beginning of the eighteenth century the Russians have sought for gold in the auriferous sands of the Altaï rivers; in 1725 the first foundry was opened, and in 1736 the argentiferous lead mines were discovered, which proved to be the most productive in the world during the latter half of the eighteenth century. The German miners, invited about 1750 to these regions in order to instruct the Crown serfs in the various branches of the industry, have become completely

absorbed in the Slav population, and are now recognised only by a few German technical expressions current in the local dialect.

The Chinese slopes of the mountains are not worked, nor are there any mines in the Eastern Altaï districts, where crystalline rocks are of less frequent occurrence. Most of the ores in the west and north are found in the palæozoic rocks, associated with granites, porphyries, diorites, or serpentines. The most abundant metals are silver and copper, besides gold, lead, zinc, iron, and in one place tellurium. Gold, silver, copper, nickel, and iron alone are at present extracted, but since the abolition of serfdom and the substitution of paid labour in 1861, the expenses, formerly less than half the profits, have gone on increasing at such a rate that several of the deeper mines have already had to be abandoned. The importance of the Altaï as a mineral region will probably continue to decline, at least until the coal-fields of the Upper Tom basin are opened and connected by rail with the metal works. Meanwhile, agriculture and stock-breeding must be regarded as the chief resources of the Altaï. In 1804 the course of the Irtish was first utilised for forwarding the metals to Russia. But craft of 32 tons, which reach Ust-Kamenogorsk from the port of the Verkniy-pristen mines in one day, take three days and often a week to return, so that during the open season a boat can at most make nine or ten trips. Of the land routes between the Ob basin and Mongolia, the most important is that between Biisk and Kobdo through the Chuya valley and Sûok Pass. Yet Ugodai, the last permanent Russian station on this historic route, is a mere hamlet of twenty huts, some 130 miles from the summit of the pass. Even the Russian encampment in the Upper Chuya valley is left in charge of the Kalmuks during winter.

Topography.

Although the Altaï region is very sparsely peopled even in the neighbourhood of the mines, still the Russian towns and villages are comparatively large. *Barnaûl*, capital of all the Altaï colonies, is one of the gayest and most flourishing towns in Siberia. Its industries are second in importance only to those of Irkutsk, west of the Ural provinces. As indicated by its name, it was a mere Kirghiz aûl when Demidov founded his mining village on the left bank of the Ob, and in 1771 it became the capital of all the mineral region in the Altaï. The great imperial foundry stands on an embankment damming the waters of the Barnaûlka, above its junction with the Ob. But the works have been frequently at a standstill since the produce of the mines has fallen off. Here are also some free industries, such as tanneries, leather dressing, bullet casting, and other establishments. The town also possesses a meteorological and magnetic observatory, and a public museum of natural history and antiquities. In the district is the copper foundry of Suzunskiy-zavod, on a small affluent of the Ob, producing about 540 tons of metal yearly.

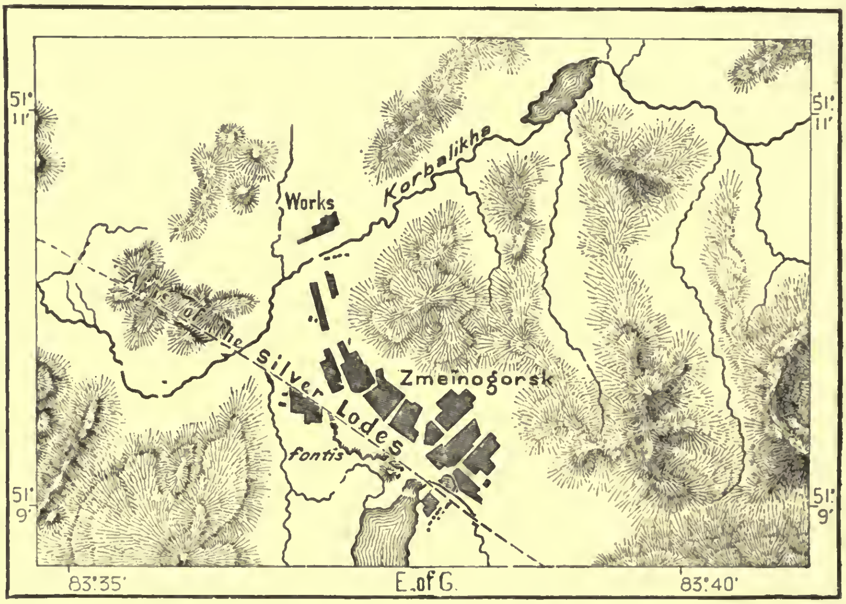
Zmeïnogorsk, or "Snake Mount," formerly the rival of Barnaûl, is now much reduced, its population having fallen from about 20,000 to 10,000. Standing on a bare hill 1,100 feet above the Korbalikha torrent, which flows through the Aleï to the Ob, Zmeïnogorsk was long the chief centre of the Altaï mining industry. About

half of the silver produced in this region down to the middle of the nineteenth century came from the neighbouring mines, most of which are now half full of water. These mines were finally abandoned in 1869, and the large smelting works are now supplied with ores from the Upper Altaï valleys farther south.

At present the most active mining town is *Ziryanovsk*, at the foot of the "Eagle Mountains," in the heart of the Altaï, in the unhealthy valley of the Beryozovka, a tributary of the Bukhtarma. Hitherto Ziryanovsk has produced about one-fourth of all the silver extracted from the Altaï,* and with the village of Bukhtarminsk it is also the chief centre of bee-farming in this region. *Riddersk*, so named from Ridder, who first surveyed its argentiferous lead deposits, lies midway between Zmeïnogorsk and Ziryanovsk, about the sources of the Ulba and Uba,

Fig. 178.—Zmeïnogorsk.

Scale 1 : 70,000.



3,330 Yards.

and is the richest lead-producing district of the Ural. Near it is the famous granite peak of Ivanovskiy-belok, 6,730 feet high. *Loktevskiy*, at the chief bend of the Aleï, west of Zmeïnogorsk, is a busy place, which formerly employed 1,200 free hands and over 27,000 serfs, and which about 1860 annually produced on an average 12,800 lbs. of silver and 600,000 lbs. of lead.

North-west of Barnaûl, between the Ob and the Tom, are the numerous argentiferous mines of *Salair*, whose annual yield averages about £8,000. The coal and iron wealth of *Kuznetzk*, on the Tom, is very little worked. But, besides its metal ores, the Altaï is rich in valuable rocks, some of which are worked up in

* Yield of the Ziryanovsk mines from 1796 to 1854 :—

Silver	1,025,000 lbs., value	21,860,000 roubles.
Lead	35,000,000 „ „	2,162,100 „

the Government works of Kolivan, 19 miles north-west of Zmeïnogorsk. Here are prepared some magnificent blocks of brown and smoked jaspar, marble, quartz, porphyry, and serpentine. But, as in most of the Government works, the expenses greatly exceed the income.

The chief trading-place in the Eastern Altaï and Sayan highlands is *Biisk*, on the right bank of the Birza, near its junction with the Katun, the main head-stream of the Ob. It is thus conveniently situated for carrying on trading relations with Barnaûl and the steppe on the one hand, and on the other with the Altaï valleys, and through the Sûok Pass with Mongolia. Its merchants meet the Chinese dealers every year in a camping ground in the middle of the swamps of the Chuya steppe, where they obtain their supplies of furs, cattle, and horses. But the exchanges, which in 1865 amounted to 200,000 roubles, have been greatly reduced since Kashgaria has lost its independence.

Kuznetzk, or the "Blacksmith's Town," lying in the Upper Tom basin, opposite the confluence of the Kondora, has gradually lost its former importance. But since it has become the chief town of a district its locksmith and hardware industries and general prosperity have somewhat revived. Its coal-fields, still unworked, have an estimated area of 2,000 square miles.

Of the summer retreats and towns devoted to pleasure the most important is *Altaiskaya stanitza*, the Koton-karagai of the Kalmuks, founded in 1871 in the Upper Bukhtarma valley, 3,520 feet above the sea. Notwithstanding its great elevation, wheat, hemp, and flax are grown in the surrounding district, while oats and barley yield returns up to 4,000 feet.

III.—THE OB BASIN.

GOVERNMENTS OF AKMOLINSK, SEMIPALATINSK, TOMSK, TOBOLSK—EASTERN DISTRICTS OF THE GOVERNMENTS OF PERM AND ORENBURG.

THE vast basin of the Ob, embracing an area of over 1,400,000 square miles, comprises all West Siberia, half of the Kirghiz domain, and even stretches south of the Altaï into Chinese territory. But the northern portion of this immense region, seven times larger than France, is still little more than a frozen solitude. The population, concentrated chiefly on the Asiatic slope of the Urals, and in the central zone between the southern steppes and northern tundras, is so sparse that, if evenly distributed, it would give scarcely two inhabitants to the square mile.

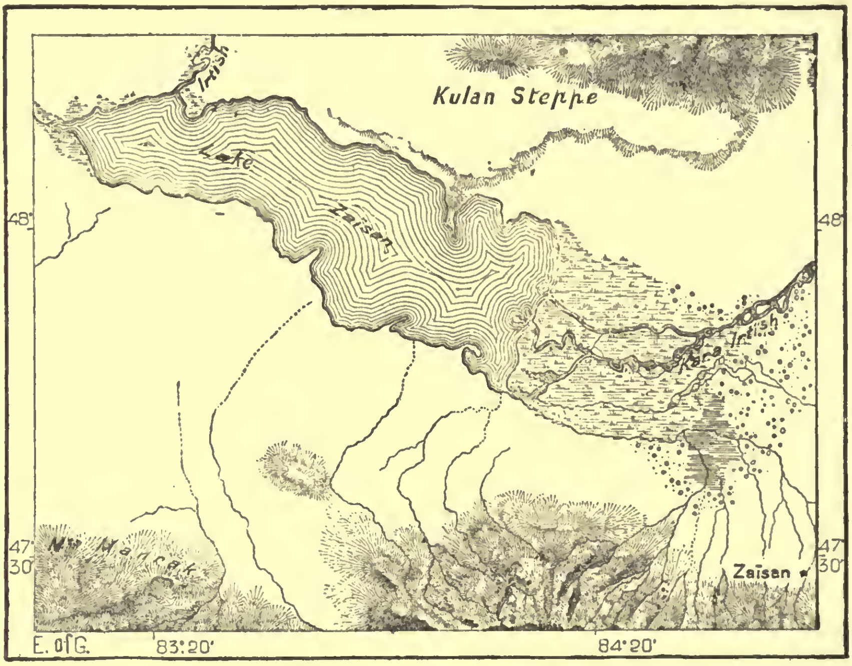
Few of the streams flowing through the Ob to the Arctic Ocean have their sources in the snowy valleys of the uplands. In the east the watershed between the Ob and Yenisei is in many places imperceptible, the tundra discharging its surface waters in both directions without any distinct parting-line. The intermediate zone is often occupied even by swamps draining either way, according to the direction of the winds on the local rainfall. Farther south the watershed between the Aralo-Caspian and Ob basins is irregularly indicated by rolling tracts or even hills. But this water-parting is diversely interrupted, and here also there occur

marshy tracts, whose drainage has taken a northern or a southern course under the slightest oscillations of the land. The hydrography of the Ob is, in fact, clearly defined only towards the west by the Ural range, and south-eastwards by the Altaï highlands and plateaux. It is in these uplands on the Chinese frontier that we meet with the Belukha glacier, the only one occurring in the Ob basin.

The Irtish Basin.

The true head-stream of the main river is not the Upper Ob, which rises in the Russian Altaï, but the Irtish, fed by the waters of the Chinese Altaï. The Irtish

Fig. 179.—Lake Zaïsan.
Scale 1 : 1,300,000.



itself, the correct Mongol form of which is Erchis, is only an affluent of a partly underground river, which rises on the Kobdo plateau, and sweeps round the advanced spurs of the Altaï north-westwards towards the great Lake Ulungur, one of the largest in Asia. A small chain of hills runs between the east side of this lake and the Irtish; but the hills gradually disappear northwards, and near an isthmus, where the stream is within 2 miles of the lake, there is seen the dry bed of an outlet, said to be filled every spring with the rising of the Ulungur. Beneath this superficial bed a hidden stream certainly flows, as shown by the comparative observations made on the discharge of the Irtish above and below the intermittent outlet. Some 12 miles higher up the volume of the Irtish is about 635 cubic feet per second, whereas farther down it is three times greater without having received

any visible fresh affluent. This great increase must evidently be due to an underground tributary, which forms a continuation of the Upper Ulungur River by flowing from the lake of the same name.

The Irtish, or "Black Irtish," which ought to be called the Ulungur, is already a considerable stream before entering Russian territory, and even before receiving the overflow of the Alpine Lake Marka through the Kaljir. Its mean depth is nearly 10 feet, with a breadth of from 300 to 560 feet, and a mean discharge of about 13,000 cubic feet per second. After its junction with the Kaljir it enters Russian territory, here forming several marshy branches, which slowly make their way to Lake Zaïsan, a still larger sheet of water than the Ulungur. This lake is about 60 miles long, at least during the floods, with a mean area of 730 square miles. But though three times larger, it is far shallower than Lake Geneva, averaging little

Fig. 180.—The Ust-Kamenogorsk Defile.
Scale 1 : 980,000.

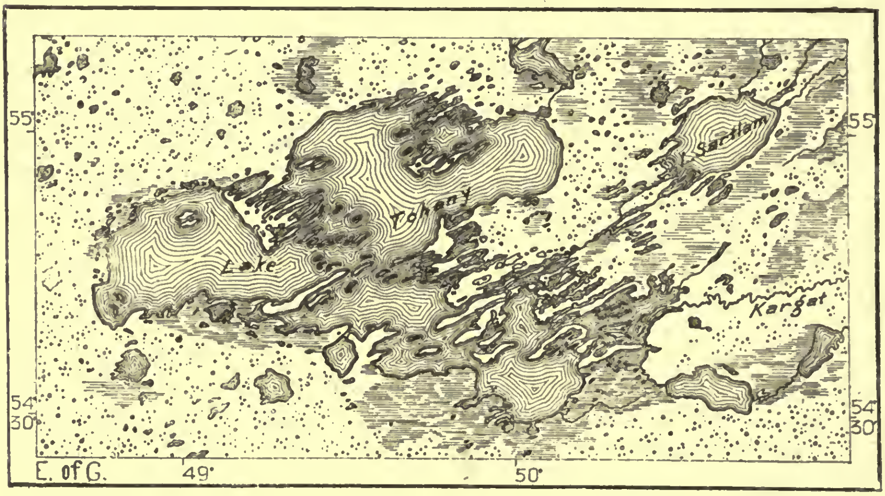
12 Miles.

over 25 feet deep. The Zaïsan is not an Alpine, but rather a vast steppe lake, although the snowy crests of the Altaï and Saûru ranges are visible through the poplars, willows, and aspens fringing its shores. It teems with fish to such an extent that the hauls of the Kirghiz or Cossack fishermen seem like "miraculous draughts" to the stranger. Besides the species common to the lacustrine waters of Europe, it contains the *nyelma*, an excellent salmon, and carps much finer than those of the West. The annual yield of fish amounts altogether to about 1,625,000 lbs., and its present name of Zaïsan, or "Noble," is said to have been conferred on this lake by the Kalmuks, whom the superabundant supply of fish saved from starvation in 1650. Water-fowl also frequent it in multitudes, but its shores are almost destitute of inhabitants. A steamer ascended the Irtish in 1864, to explore its waters and penetrate up the Black Irtish to the station of Ak-tubeh, on the Chinese frontier, and in 1880 the project was discussed of establishing a regular

steam service between Tumen, the Zaïsan, and Black Irtish, a distance by water of about 960 miles.

At an elevation of 1,330 feet the "White" Irtish issues from the north side of the lake in a slow current, but after its junction with the Kurchum, the Narim, and Bukhtarma it becomes more rapid, and soon enters one of the wildest and most romantic gorges in the world, the Ust-Kamenogorsk defile, beyond which it assumes its normal north-westerly course. At this point, which formerly marked the southern limit of the Ob basin, it is about 1,160 feet above sea-level, and below Ust-Kamenogorsk the stream ramifies into several branches, enclosing grassy islands from 10 to 40 square miles in extent. During its lower course from the Altaï defile to its confluence with the Ob, the Irtish receives over one thousand

Fig. 181.—Lakes Chany and Sartlam in 1870.
Scale 1 : 1,500,000.



3,330 Yards.

affluents of all sizes, although hundreds of streams which formerly reached its banks are now lost in the swamps of the salt and arid steppes.

A large portion of the level tract comprised between the Ob on the east, the Irtish and Om on the west and north, is known as the Baraba steppe, although rarely presenting the aspect of a true steppe. Not a rock is anywhere to be seen, and the surface is pleasantly diversified with groves and clusters of pine and birch, disposed as if by the hand of an artist in picturesque disorder. This natural park presents an endless variety of landscapes, and yet the only elements in the scene are its pines, birches, grass, and prairie flowers. In some places, however, this region assumes the appearance of a true steppe, with salt and marshy tracts, crossed by the great Siberian military route for a distance of 400 miles, from Omsk to Kolivan. But even here the cultivated lands are gradually encroaching on the steppe, and numerous colonists from Voronej, Simbirsk, and Samara have already settled in this "birch steppe," whose fertility is justly extolled, although the soil

consists only of a thin layer of black loam, resting on a bed of disintegrated micaceous schists. Since the middle of the century the Baraba has lost much of its moisture, and some districts are already beginning to suffer from droughts. Yet the depressions are still covered with extensive shallow lakes. Of these the largest is Lake Chany, which has an area of 1,200 square miles, but is nowhere over 26 feet deep, and though teeming with fish when visited by Pallas, is now almost uninhabited. The deepest is Sartlam, which in some places is over 30 feet, and all present forms analogous to those of Sweden and Finland. Thus the Chany is divided into secondary basins by long parallel peninsulas with several islands, all disposed in the same north-easterly and south-westerly direction. The rivers flowing to Lake Chany, the marshes, and the low ridges separating the river basins also follow the same line. This remarkable uniformity may possibly be due to a great marine current, formerly setting towards the Aral Sea, though some geologists are inclined to attribute it to the action of the glaciers, which may at one time have reached these plains from the Urals and Altaï, here producing the same effects as have been observed in Finland and the Russian governments of Olonetz and Archangelsk.

Lake Chany, like most of the lacustrine basins in the Baraba steppe, has no visible outflow to the Irtish, and, as the evaporation is greater than the rainfall, some saline reservoirs have been formed here and there. The water is still fresh in the south, where the rivers Kargat and Chulim join the lake; but in the centre it has become brackish, and in the western extremity quite salt. Yet there must be an underground outflow to the Irtish, either from the Chany or from some other neighbouring lakes, for near the village of Jelyezimskaya, on the right bank of the river, there are copious springs, by which the volume of the Irtish is sensibly increased.

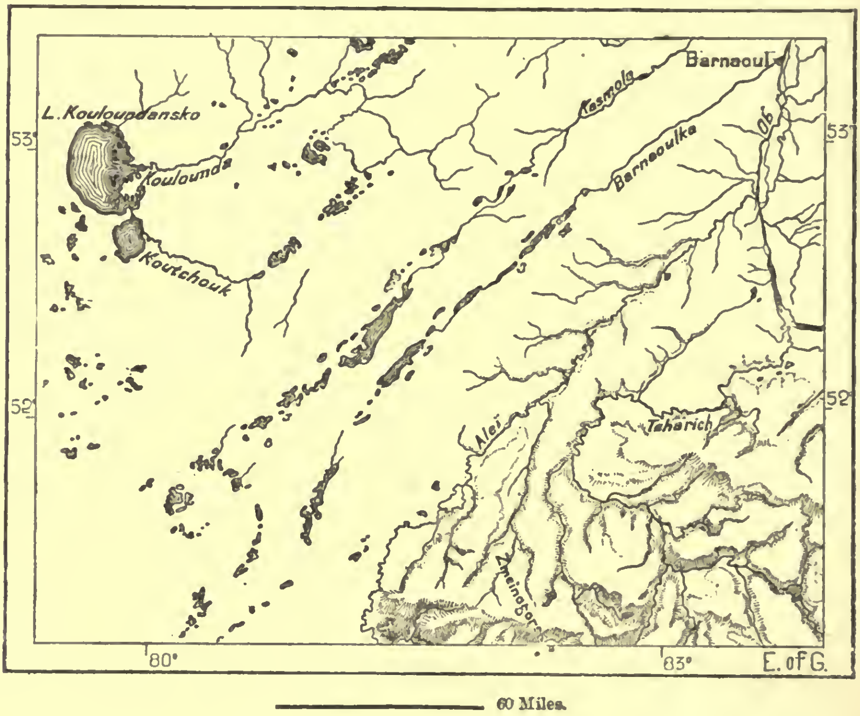
After its junction with the Om the Irtish describes a long curve towards the east, and then resumes its north-west course to its confluence with the Ishim and Tobol. Of these great tributaries the longest is the Ishim, the Isel of the Kirghiz, which has a course of about 1,000 miles. The region through which it flows has greatly diminished in moisture, as is evident from the numerous dried-up lakes and marshes, much reduced in size, which formerly drained to the Ishim. Although inferior to the Irtish in volume, the Tobol might be regarded as the real main stream of the Ob basin, the general direction of its valley being the same as those both of the Irtish and the Ob itself, below its confluence. Throughout its course it skirts the eastern slopes of the Urals, and it thus receives the larger streams flowing eastwards from this water-parting between the Ob and Volga basins. One of these streams is the Tura, whose course was followed by the first invaders of Siberia, and which, since the time of Yermak, has remained the chief historical highway between European and Asiatic Russia. Formerly the Tobol joined the Irtish opposite the high cliff on which stands Tobolsk. But the rock being constantly undermined by the current, this city was threatened sooner or later with the fate of the old town of Sibir, which also stood on the "high"—that is, the right—bank of the Irtish. To avoid this danger Governor Gagarin, in 1716,

employed the Swedish prisoners of war confined there to dig a canal about 2 miles long, which removed the mouth of the Tobol farther down, and thus enabled the engineers successfully to protect the base of the Tobolsk escarpments from the erosive action of the stream.

Course of the Ob.

The Upper Ob, which rises in the Altaï, joins the Irtish 300 miles below Tobolsk. Its chief head-stream, the Katun, or "Queen," flows from the glaciers in the highest part of the range, but the main stream does not take the name of Ob till the confluence of the Katun and Biya, 390 miles below the Bielukha glacier. After

Fig. 182.—Dried-up Streams in the Barnaûl District.
Scale 1 : 3,170,050.



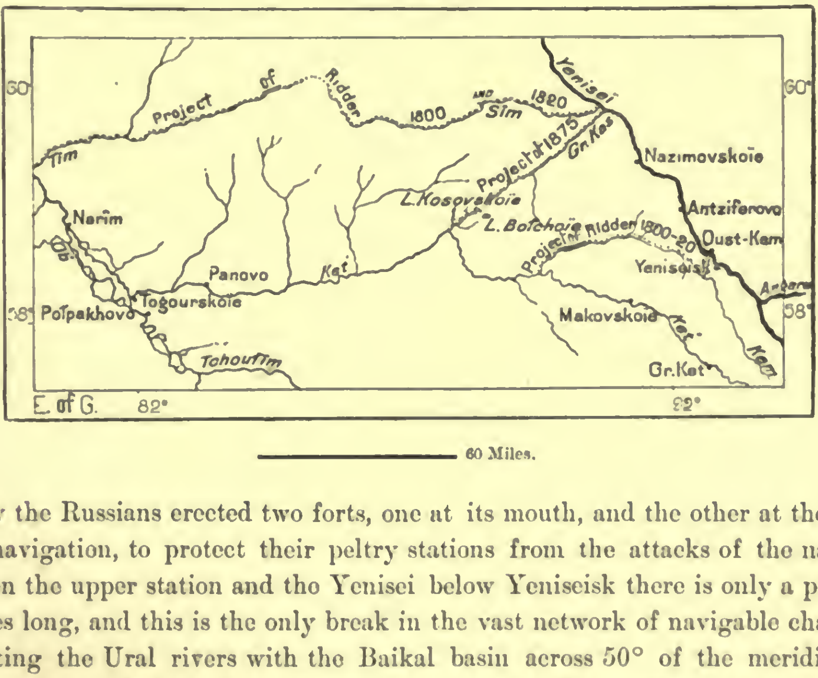
emerging from the highlands, and at its junction with the Barnaûlka, opposite Barnaûl, capital of the Altaï regions, it is little over 300 feet above the level of the sea. Here the steppe is already so level that, as in the Irtish valley, many streams expand into lakes and swamps before reaching the Ob. But it is probable that in former times, and under a more humid climate, the more copious rivers, now represented only by chains of small lakes, possessed more regular channels. The course of many of them towards the Ob is, so to say, little more than faintly traced, varying in length and distinctness with the greater or less abundance of moisture from year to year.

Owing to its slight incline, the Ob itself assumes in many places a lacustrine

character, ramifying into numerous branches, and widening into permanent island-studded expanses. Its mean breadth varies from 2,650 feet to nearly 2 miles, and in the spring floods from 20 to 25 miles, now assuming the proportions of a great inland sea, as at Kolivan, where the opposite banks are invisible. Below the junction of the Tom and Chulim it ramifies into a great number of branches, forming a continually shifting labyrinth of channels, covering the whole plain. During the five or six winter months these low-lying waters are divided by the ice into a number of separate basins, which cease to flow and become stagnant lakes unfit for human use, and cut off from all communication with each other like the surface tarns often left on the steppes by dried-up rivers.

The Ket, which joins the Ob above Narim, though not one of its great tributaries, is nevertheless navigable for nearly 600 miles, thus affording the best natural highway between the Ob and Yenisei basins. During the first invasion of Siberia the Cossacks followed this route, and in the beginning of the seventeenth

Fig. 183.—Projected Canals between the Ob and Yenisei.
Scale 1 : 7,400,000.

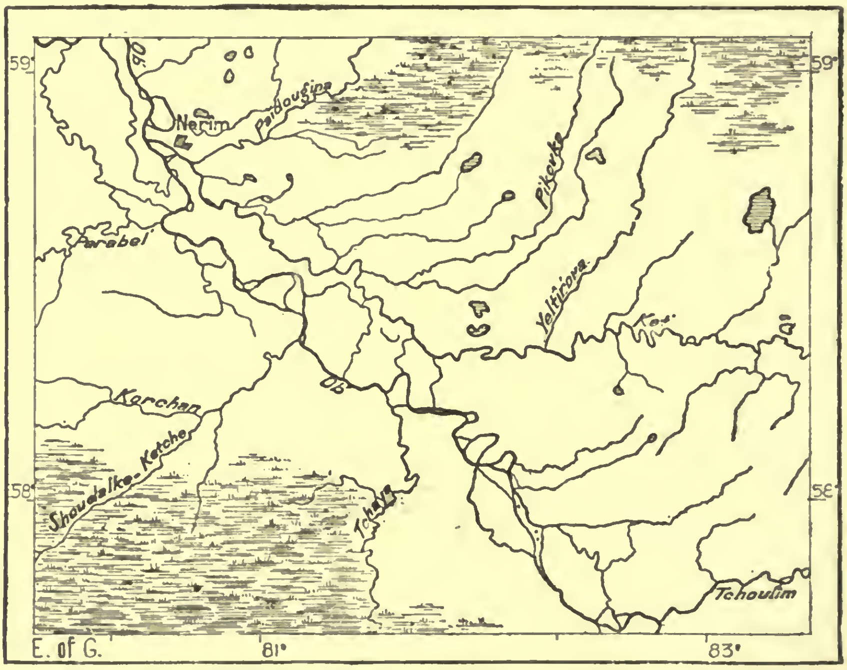


60 Miles.

century the Russians erected two forts, one at its mouth, and the other at the head of its navigation, to protect their peltry stations from the attacks of the natives. Between the upper station and the Yenisei below Yeniseisk there is only a portage 62 miles long, and this is the only break in the vast network of navigable channels connecting the Ural rivers with the Baikal basin across 50° of the meridian, or nearly one-sixth of the circumference of the globe. The project of bridging over this gap is now being entertained, and since 1872 the scientific exploration has been resumed of all the rivers in the district enclosed by the Ob and Yenisei, where their courses approach nearest to each other. Careful surveys have already been made of the Chulim, which is navigable for steamboats as far as Achinsk, north-west of Krasnoyark, on the Yenisei, and of the Tim and Vakh, by which the two affluents of the Yenisei, the Sim and Yelogui, may be respectively reached. The Ket still seems to afford the greatest facilities for effecting a junction between the two main streams. But instead of ascending it to Makovskoye, near its source, it

is proposed to utilise the little Yazeva affluent, passing thence by a canal across a level marshy tract to the Kas, a tributary of the Yenisei. Here the portage is only 4,220 yards long, between two lakes standing at the same elevation above the sea. A junction canal, 4 feet deep and 50 feet wide, would give access to boats of about 30 tons burden, and the incline either way is so slight that no locks would be needed. The only obstacles to the navigation would be the so-called *lom*, or snags, which form dams at the windings of the stream, but which might easily be removed, as all of them rest on mud beds. When this canal is completed there will be a great reduction in the freights, amounting possibly to as much as 5 roubles per tea-chest. In 1825, when all the tea brought from Kiatkha to Nijni-Novgorod was conveyed

Fig. 184.—Network of Streams at the Ob and Ket Junction.
Scale 1 : 2,000,000.



30 Miles.

by the rivers and portages, the merchandise passing by the village of Makovskoye was estimated at over 10,000,000 roubles.

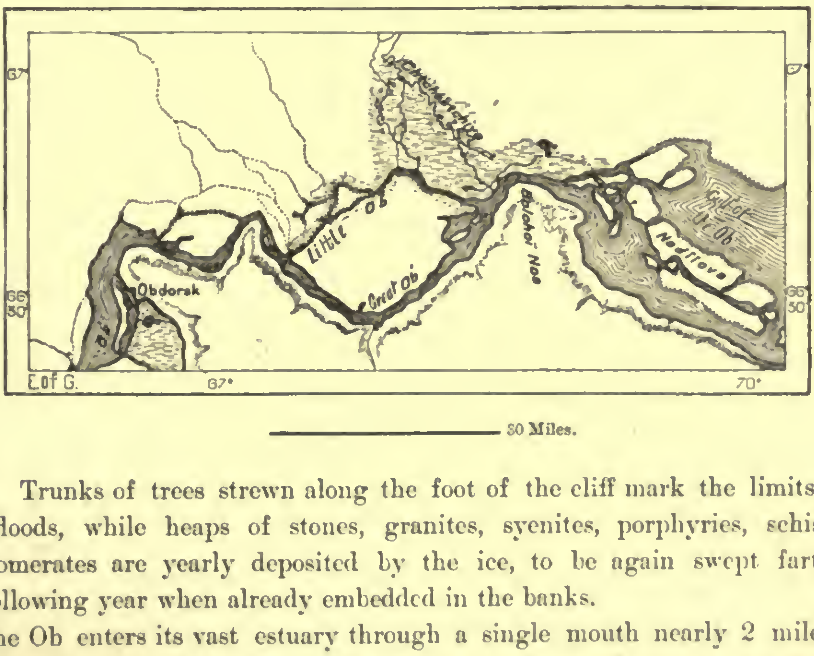
Below the Narim the Ob, after receiving the Tim, Vakh, and others scarcely less important than the Ket, continues its sluggish course first north-west and then west to the Irtish, which it joins through a network of intricate channels, whose navigation demands the most skilful piloting. After their junction the two rivers, each about equal to the Danube in volume, again divide, as if a common bed were insufficient to contain this moving sea. The two streams, now respectively called the Great and Little Ob, continue their winding course to the estuary at distances, in some places, of from 20 to 25 miles, but everywhere connected by countless inter-

mediate channels. The Little Ob, which is the left stream, is the narrowest and shallowest, but owing to its less rapid current is preferred by craft ascending inland. The navigation of the Great Ob, used chiefly by boats going seawards, is at times endangered by the north wind raising high waves against the down current. The confluence of the Ob and Irtish lies beyond the zone of cereals; but the Lower Ob remains to its mouth within the limits of forest vegetation, its banks being fringed throughout with pines, firs, the larch, birch, and willow. Although less brilliant and varied in colour than those of North America, the autumnal tints of the Ob forests are still brighter than the foliage on the European seaboard.

The banks of the Lower Ob everywhere consist of clays and sands, which are being constantly undermined by the current. Those of the Little Ob are very low, and often concealed by a dense growth of reeds, carex, and other aquatic plants. But those of the Great Ob rise in some places 200 feet above the stream, and are pierced at intervals by ravines through which the scrub descends to the water's

Fig 185.—Lower Course and Mouth of the Ob.

Scale 1 : 1,160,000.



edge. Trunks of trees strewn along the foot of the cliff mark the limits of the last floods, while heaps of stones, granites, syenites, porphyries, schists, and conglomerates are yearly deposited by the ice, to be again swept farther on the following year when already embedded in the banks.

The Ob enters its vast estuary through a single mouth nearly 2 miles wide, and from 30 to 90 feet deep. The section of the gulf running west and east is often regarded as still belonging to the river itself; but in this bay, some 30 miles wide, the normal current has entirely ceased. Other minor inlets are formed at the mouth of every influent. But the vast fiord of the Ob, stretching for over 480 miles towards the pole, as well as that of the Taz joining its east side, is still but partially explored, although formerly visited by the Kholmogori fishers from the Petchora, and again surveyed in recent times. In 1877 Dahl penetrated from the Kara Sea round the Yalmal peninsula, and through the gulf into the river. The commercial route to the Ob basin was thus thrown open,

and its cereals, wool, tallow, hides, and furs may henceforth be shipped direct for the ports of West Europe. The river itself is navigable throughout nearly the whole of its course, which, including the Ulungur as its farthest head-stream, may be estimated at about 3,400 miles in length.* But the navigable waterway is far more extensive. In summer all the large, and during the spring floods most of the secondary, affluents give access to flat-bottomed craft and steamers, affording a navigable highway of not less than 9,000 miles. Since 1844, when the first steamer was launched on the Tura, the steam fleet has gone on yearly increasing, and in 1877 numbered 34 vessels of 2,655 horse-power. On the other hand, none of the various schemes of canalisation between the Ob and Volga basins, and between the Ob and Kara Sea, have proved feasible. But Struve thinks the Petchora and Ob basins might be connected by a canal 50 miles long between the Kokpela and Voïkar tributaries of the two main streams respectively. It would be still easier to connect the Taz and the Yenisei by a canal running along the 66th parallel from the hamlet of Tazovka to Turukhansk.

Inhabitants of the Ob Basin—The Voguls.

About half of the population of Siberia is concentrated in the southern regions of the Ob basin, in an irregular zone stretching along both sides of the old historic highway and its modern continuation eastwards. This population consists exclusively of Slav elements, forming an Asiatic Russia in speech, manners, and culture. Here the Russians have completely replaced the Tatars, formerly the dominant race, but now scattered in detached groups over the steppes far from the towns and river banks. Some of these more or less Russified Tatar communities are still met in the neighbourhood of Tobolsk, west of the Irtish, near the seat of their former empire. On the Irtish itself there also dwell certain Russian peasantry traditionally said to be of Tatar origin, but also resembling their ancestors only in the traits of their features. East of the Ob the Chulim valley is occupied by the Kizil, or "Red" Tatars, so called to distinguish them from the Kara, or "Black" Tatars of Biisk. Their speech, one of the purest of Tûrki dialects in its structure, is largely affected by Mongol elements, and has recently adopted many Russian terms. But, like the Telengut dialect, it is distinguished from most other idioms of Tûrki stock by a complete absence of Arabic or Persian words. Never having adopted the faith of Islam, these Red Tatar Shamanists, who have now become orthodox Christians, have never had any relations with the Mussulmans of the south, and have thus remained free from all Mohammedan influences. On the other hand, the Kazaks or Kirghiz in the southern parts of the Ob basin and about the sources of the Irtish form an ethnical group with the Kirghiz hordes of the Aralo-Caspian

	Miles.
* Course of the Ulungur	300 (?)
Black Irtish to Lake Zaïsan	360 (?)
Irtish from Lake Zaïsan to the Ob	2,000
Ob from the Irtish junction of the Gulf	750
Total	3,410 miles.

region. Many of these nomad tribes have pastures and camping grounds in both basins, though the administrative divisions here coincide on the whole with the ethnical limits. Thus the territory of the Kirghiz, even where it encroaches on the Irtish valley, is assigned to the general government of Central Asia, while the Bashkirs of the Asiatic Ural districts are included, with their kinsmen of the western slopes, in the European governments of Orenburg and Perm.

In the northern division of the Ob basin all the aborigines, whether Voguls, Ostiaks, or Samoyedes, belong not to the Tûrki, but to the Finnish stock. Since they have been driven east by the Russians the Voguls have dwelt chiefly on the Siberian slopes of the Urals north of Yekaterinburg, and especially in the valley of the Konda, a tributary of the Irtish. A few families reside on the European side of the mountains, but most of those who are here met are hunters in pursuit of game from the east. The Voguls are of the same branch of the Finnish race as the Ostiaks, and both were till recently collectively known by the common name of Manzi. The former still retain the small oblique eyes characteristic of the race, but most of them have become Russified in dress, habits, and pursuits. Hence the difficulty of ascertaining their real number, which is officially stated to be 4,500, but is by different observers variously estimated at 18,000 to 30,000.

The Vogul hunters have best preserved the customs of the tribes which Yermak had to overcome on his way to the kingdom of Sibir. With their thick furs and hoods adorned with the ears of animals, they look at a distance like wild beasts of the forest. But they are really a harmless and even timid race, whose mild expression is increased by their shaven faces, which would else in winter be changed by their frozen breath to one mass of ice. They are never known to rebel against the orders of the traders by whom they are employed, and treated as genuine serfs. They spontaneously pay the taxes to the civil authorities, and bind themselves beforehand to do all that may be required of them. Hence they naturally accepted Christianity, at least in appearance, when ordered to do so in 1722. But every family still cherishes its household gods, represented either by quadrupeds with scaly tails, or by the masked figure of a man with a tall head-dress. These rude figures are attached to the bark of a pine, fir, or birch tree, whence the Russian term Shaitanka, or Shaitanskaya ("Satanstead"), applied to so many forest clearances. The Voguls also worship a great national idol, doubtless the "Old Woman of Gold" mentioned by Herberstein. Its sanctuary, say the hunters, is found in the midst of swamps and gloomy forests in some upper valley of the Urals. Women passing near the hallowed site dare not even look upwards to the trees shading the deity, for a single glance would cost them their lives. During the night of the feast the men gather round the idol and kindle a scaffolding of stakes, which burns like a huge torch. On the return of darkness a member of the tribe approaches a horse tethered to a tree, and strikes him with a pointed knife. The blood is received in a sacred goblet, of which every Vogul drinks. The rite is supposed to have failed should the horse die at once, or before all have had their share of the blood. The Voguls are also said to worship the sun, invoking it for fine weather either directly or through their Shamanist priest, in whom they have great confi-

dence. "Our shamans," they say, "are better than the popes. The popes foretell the things of death, the shamans those of life."

Like so many other Finnish peoples, the Voguls have their family totems tattooed on their heads, arms, and legs. These figures, mostly representing bows and arrows, squares, circles, or arabesques, are not merely ornamental, but possess a sacred character, symbolizing the family traditions and genealogies from generation to generation. In the forest the Vogul carves his totem on the trees to indicate his passage to those who may pass by after him. He also attaches it to the religious or civil documents presented to him by the priests or Government officials, and he endeavours to cure sores and ulcers by tattooing the skin close to the part affected. But, in spite of all these symbolic tattooings, the Voguls are probably the least sociable of the Siberian aborigines. In summer they live in isolated families, each pursuing the forest game; in winter they pitch their tents or build their huts at considerable distances one from the other, being nowhere grouped together in villages. Even the family spirit seems but slightly developed. The hunter may have one or more wives according to his means, but the least disturbance dissolves the union, and the husband will then often live quite alone, accompanied only by his reindeer and dog. Most of the old men thus forsaken by their wives die a solitary death, victims generally either of hunger or cold. Hence burials also are attended with little ceremony. A grave is dug on the spot where the body is found, and with it are buried the arms of the departed together, with a supply of tobacco and brandy, but no salt, which is unknown in the Vogul cuisine.

The Ostiaks.

The chief nation in North-west Siberia is that of the Ostiaks of Russian and other European writers, but who call themselves Kondi-Khu ("People of the Khonda River"), As-Khu, As-Yak ("People of the Ob"), or simply Manzi—that is, "Men." To As-Yak some trace the term Ostiak, which others identify with the Tatar Ushtiak, or "Stranger," or to the Russian "Chûd," which has the same sense, and which is generally applied by the Slavs to the ancient races of Siberia. According to the ethnographic charts the Ostiaks would appear to occupy a vast domain stretching from the Ob estuary to the middle course of the Irtish, and from the Urals to Nijnyaya Tunguska. But this region, of some 400,000 square miles, is mostly a solitude, in which the Ostiaks, according to the latest estimates, number scarcely 25,000 souls altogether. The names of many tribes mentioned at the beginning of the present century seem to have vanished with the tribes themselves. The important memoirs of Castren and Radlov on the languages of these peoples are all the more precious that they all seem destined to rapid extinction as independent ethnical groups. Several Ostiak communities near the Russian settlements have already lost their national speech, and are known only by tradition to have belonged to the old stock. The Russified Ostiaks are said to be generally of smaller stature, but more prolific, than those who have preserved their racial purity.

When the Cossacks conquered Siberia the Ostiaks, who opposed them with

OSTYAK TYPES AND COSTUMES.

numerous armies, had a complete national organization, and dwelt in regularly built towns. In the single expedition of 1501 the Russians destroyed forty-one of these fortified places, the ruins of some of which are still to be seen in the Obdorsk district. Now the Ostiaks have become mere hunters and fishers, dwelling in wretched hovels, abjectly submissive to their Russian masters, and only too glad to pay their taxes whenever they are not prevented by their extreme poverty. So rapid is the decrease of the race in some districts that it has been attributed not only to famine, but to the sterility of the women and mortality of the children, two-thirds of whom perish in their first year. The births are also diminished, on the one hand, by polygamy, on the other by celibacy, occasioned by the difficulty of paying the *kalim*. Yet hunger and misery would alone suffice to explain the decay of the race. The tribute exacted by the Russian Government had formerly to be paid in peltry. But the fur-bearing animals disappear with the destruction of the forests, and the Ostiaks are now bound to pay in specie. Being thus unable to refund the advances made for corn, their winter supplies are often stopped, and then whole families perish of famine fever. The extinction of the race is also accelerated by their love of drink, and the condition of some tribes is altogether so deplorable, and their approaching extinction so inevitable, that it has been proposed to distribute the children amongst the Russian families and leave the adults to their fate.

Although on the old maps their territory bears the name of Yugria, the present Ostiaks cannot be regarded as the pure representatives of the Ugrian family, of which the Hungarian Magyars are a branch. No pure Ostiaks are found south of the 60th parallel, where the crania present different types, although all are more or less brachycephalic, some approaching the Mongol, others the Lapp form. The Ostiak dialects also, which of all the Finnish idioms most resemble the Magyar, show obvious relations, on the one hand, to the Tatar, on the other to the Mongolian. Relying on this twofold relationship, Castren assigns to the race an Altaic origin, for in the Altaï highlands alone they could have come in contact both with Tatars and Mongols. Like other Finnish dialects, the Ostiak language is very harmonious. Its phonetics include a sibilant analogous to the English *th*, but the letter *f* is wanting.

The Ostiaks are physically rather smaller, but when well fed quite as robust as the Russians. They have round features, arched forehead, prominent cheek bones, short and round chin, black and slightly oblique, but very sparkling eyes. The hair is black and pliant, and the beard very thin, as amongst most Asiatics. As with other Finnish peoples, the type of the young women approaches far nearer to the Mongolian than does that of the adults.

The district of Obdorsk, chief centre of the Ostiak tribes, represents, both ethnically and geographically, the conditions which prevailed in Europe during the reindeer period. Like the Europeans of that epoch, the Ostiaks eat both carnivorous and graminivorous animals, the fox and allied species being their favourite food. They devour the raw flesh, as did the troglodytes of the Weser valley, always beginning with the intestines, which are regarded as the tit-bits. Stone, horn, and

bone are still chiefly used in the fabrication of their implements, which are exactly like those of the old European cave men. The bear's tooth is their amulet, the symbol of their pledged word, the remedy for most complaints. The mats plaited by the Ostiak women resemble those of the Swiss lake dwellers quite as much as they do those of the modern Kamchadale tribes, just as the instruments used by them in weaving their yarns are identical with those still found in North Russia, and which certainly date from prehistoric times.

Political oppression and usury have destroyed the national unity and civilisation of the Ostiaks, and caused them to abandon their old towns. Still many large communities have retained the old spirit of solidarity, the members regarding themselves as relatives, and mutually aiding each other. Thus the successful hunter shares the spoils of the chase with those who return empty-handed. Owing to their strict honesty, differences are rare between members of the federation; but when they arise appeal is made to an elder, whose decision is final. In the neighbourhood of Obdorsk family quarrels are settled by the prince descended in direct line from the chief appointed by Catherine II. The prince and elders receive no subsidy from the people, but neither they nor the shamans are above accepting presents from their subjects.

From time immemorial every Ostiak federation has had its special gods, protectors of the race, guarded by the shamans, who are at once the priests, prophets, doctors and wizards of the tribe. The sacred groves contain hundreds of these deities, rudely carved figures of divers forms, often resembling the Polynesian idols. Each family has also its gods, cut, like the others, out of wooden blocks, and mostly dressed in red garments, with tin heads, and often armed with swords and coats of mail. But above all these tribal and family divinities the great god is throned in the "seventh world," clothed in the light of dawn, and speaking with the voice of thunder and the storm. This is Turm, or Turum, whose name recalls that of the Scandinavian Tor, or the Taraun of the Gauls. No one dare invoke him, for he hears not even the shaman's prayer, and is guided only by the immutable laws of justice or of destiny. Hence no offerings are made to him, and to his sons and other inferior deities, including the St. Nicholas of the Russians, are reserved the sacrifices of reindeer and sheep (sometimes immolated in the church itself), the presents of furs, antlers, and other precious objects. At the same time the shaman alone can render these offerings acceptable; he alone can make his voice reach the ears of the gods in his chants and beating of the drum. A ribbon at the end of a pole held before the idol's mouth indicates by its flutterings the divine will. The shamans also are alone authorised to work miracles, which are regarded as such not only by the natives, but by the Russians themselves. For them the "black religion" is no less efficacious than their own, although it acts in virtue of the evil spirit. Amongst most of the Siberian populations the shamans are a sort of half-divine beings, controlling the hidden forces of nature, conjuring the elements, healing maladies, detecting the secrets of the future, holding familiar converse with the good and evil spirits of heaven and earth. "To the hero brute force, but to the shaman the words that give strength; to the hero bow and arrow, but to the

shaman the power in virtue of which the arrow hits or misses the mark, the wound kills or not. To the hero noise and clatter, what we see and what we hear, but to the shaman what we neither hear nor see, silent wisdom, the science of causes and the knowledge of things." Wrangell himself admits that he could never look on a shaman without a sort of awe. But this superhuman power is not hereditary, nor does the shaman select his disciples from his own family. If he observes in the tribe a young man, thin, pale, and haggard, subject to sudden paroxysms of fury or epilepsy, fond of solitude, holding nightly vigils, him he chooses as his successor. He first strives to regulate his fits by magic remedies, then subjects him to a period of novitiate, and teaches him the art of working wonders. The shaman's magic is a veritable science, in so far as it imparts an understanding of certain physiological phenomena with a view to profit.

Occasionally the gods of one family or tribe pay a visit to those of another. Then take place the great ceremonies, warlike dances that have lost their meaning, mimicry of hunting scenes, much playing on the *dombra*, a stringed instrument like the *tombora*, borrowed by the Magyars from the Southern Slavs. Dancing ends with a banquet, of which the gods partake, and at which the shamans smear their faces with blood. But the deity must show his gratitude for the offering; its value is discussed with him, and he is sometimes induced to be more moderate in his demands, more generous in his dealings. There are also wicked gods, such as the water god, who is sometimes appeased by drowning a reindeer in the river. Ideas of sanctity or magic are associated with everything in nature distinguished by its strength, size, or solitary grandeur. The cedar towering above the forest pines is a sacred object, as is also the bear, "son of Turum," and representative of justice on earth. When he is slain in the chase the hunter implores forgiveness, for five days afterwards performing divers ceremonies in presence of the body, intermingled in some tribes with blows and insults. No oath is so sacred as that taken "by the jaw of the bear," for he sees everything, knows all things, whether alive or dead. Like most of the Finnish tribes, the Ostiaks pay great respect to their departed brethren, taking care to provide them with everything they needed on earth—sleigh, javelin, harpoon, axe, knife, hearth-stone, fuel, and at least a semblance of food. Parents also keep a figure of the dead, dressing and undressing it, placing it at the table and putting it to bed. But after three years they regard the death as a settled point, for the body is now decomposed, and the puppet buried with the remains in a grave decked with reindeer horns, carved images, tinkling bells, and streaming ribbons. In the "third world" there are no more ailments, no more Russian officials, no more taxes to pay. Unfortunately the Ostiaks never enter this heaven, but remain in the "second world," which lies beyond the Gulf of the Ob, at the other side of the ocean.

The Ostiak wife is purchased like an ox, and always regarded as impure. She is even nameless, and, as with the Samoyedes, she is excluded from the part of the tent reserved for the provisions. In some tribes the husband and her own children are even accustomed to fumigate the place she has occupied. She never inherits anything, but herself forms part of the family inheritance. Nevertheless the mild

character of the race protects her from all violence, and for the genial good-humour and kindliness of the husbands many Ostiak families might serve as models to their Russian neighbours. In the south and along the Ob, where Tatar influences preceded those of the Slavs, the women are obliged to go veiled, or else to turn aside in the presence of the men. In other respects all the Ostiaks resemble the Samoyedes in their habits, dress, and speech, and, like them, live on their reindeer herds.

The Samoyedes of the Ob and Taz estuaries and Lower Yenisei valley belong to the Yurak stock, and are consequently allied to those of North-east Europe. They are the same small, timid, moody, and hospitable race, though they still practise the religion of blood, and force bits of raw flesh between the teeth of their idols. The Eastern Samoyedes, met here and there south of the Taimir peninsula as far as the Khatanga Fiord, form another group, that of the Tavgi, oftener known to the Russians as the Dikaya Orda, or "Savage Horde," not because less civilised, but because they have not yet been baptized, and have remained more independent than the other Samoyedes. They keep aloof from the Russian traders, priests, and officials; but in their progress northwards, beyond the Slavs, Tunguses, and Yakuts, they have nowhere reached the sea. The coast region they regard as belonging by right to the "white bear people," and seriously relate how their frequent attempts to conquer that territory were defeated by the bears, who always unfairly pitted twelve of their men against eight Samoyede warriors.

Some few tribes are scattered much farther south in the Upper Yenisei basin beyond the districts settled by the Russians. These are the Kamasses, or Kamassintzes, who occupy the banks of the Kan and Mana, south-east of Krasnoyarsk. Castren regards them as the purest of the race, being those who have remained in their primitive homes near the Altaï Mountains. Several of the surrounding Tatarized or Mongolized tribes state that their forefathers spoke a different language from their present speech, and Castren assumes that this must have been of Same or Finnish stock. Driven by the Tatars from their native valleys, the Samoyedes followed the Yenisei and Ob north and north-west, leaving colonies here and there in the regions less exposed to attack, but obliged in many places to change their name, language, and usages, according to the populations with whom they came in contact. Thus during the Tatar rule most of them became absorbed in the Tûrki element. On the right bank of the Ob and in the valleys of its eastern tributaries, the Chulim, Ket, and Tim, there are about 4,000 Samoyedes, usually grouped with the Ostiaks, and who will probably ere long come to be regarded as Russians.

The Ural Mining Districts.

The Slav element is relatively very dense in the portion of the government of Perm comprised in the Ob basin, and which has already a population of about one million. While naturally benefiting by the advantages derived from its proximity to Europe, this region still relies on its own resources for its relative importance in

the empire. The Central Urals are the chief mining country in Russia, yielding the precious metals, iron, coal, and salt in abundance. As on the European slopes, the crystalline rocks, and the Silurian, Devonian, and triassic formations of the higher ridges and lateral spurs, have been partially disintegrated and strewn along the eastern foot of the mountains, and amongst these masses of débris are found the valuable minerals by which the Slavs have been attracted to this region. Fiscal reasons have induced the Government to group in one administrative province the

Fig. 186.—Lakes and Marshes in the Iset Basin.
Scale 1 : 455,000.

6 Miles.

mining districts of both slopes, whereas the natural limits ought to follow either the water-parting between the Ob, Petchora, and Volga basins, or else the depression of the Irtish, coinciding with the ancient maritime strait between the Caspian and Arctic Ocean. The actual administrative frontiers between the two continents have been traced almost at haphazard, obliquely crossing the rivers, and intersecting without any geographical system the region of lakes, swamps, forests, and uncertain slopes which stretch east of the Ural range.

About the beginning of the eighteenth century the mineral wealth of this country began first to be utilised by the establishment of smelting works on the sites of the old "Chûde" mines. The growing importance of the district, the large revenue derived by the Government from its resources, and especially the colossal fortunes rapidly made by a few lucky speculators, soon drew attention to these highlands, which have since become one of the classic lands of geology. As many as 100,000 hands have here been employed at a time; but since the discovery of the Californian and Australian "El Dorados" the relative importance of the Urals as a mineral-producing land has been greatly reduced. Still, although the copper ores of the Yekaterinburg district cannot compete in the European market with those of Australia, Chili, or Bolivia, the iron ores of the Urals, equalling in value the best found in Sweden, must always retain their value for Russia, while for its beautiful malachites and other rocks the Ural range still holds the first place. The railway now connecting the two chief towns of the province, Perm and Yekaterinburg, will aid in the more rapid development of these treasures, which have scarcely been hitherto utilised except for royal residences and some privileged museums. The malachite deposits are conveniently situated near the railway station, which bears the name of "Asia," as if to remind the European traveller that he has entered another continent. At Nijne-Tagilsk, already noted for its gold, platinum, and iron, a pure block of magnificent malachite weighing over 300 tons has been found at a depth of 300 feet from the surface. The Visokaya-gora Hill, which has supplied the furnaces of Tagilsk and Neviansk since 1720, consists of a huge mass of iron, containing at least 6,000,000,000 cwt. of ores, about two-thirds of which are pure metal.

Topography of West Siberia.

The old capital of this mining district is *Verkho-Turie*, so called from its position in the valley of the Upper Tura. It was founded in 1598 on the site of Nerom-kura, the *Gorodishche* of the Chûdes or Voguls, and remained for over one hundred and fifty years the commercial centre of all the mining districts. Here is the oldest monastery in Asiatic Russia. But it lost all its importance when, in 1763, the new route was opened much farther south between Perm and Yekaterinburg. From the same cause its neighbour *Pelim*, on the Tavda, was soon reduced to an obscure hamlet. All the mines and metal works of the Upper Tura basin constitute the Goro-Blagodat district. The mountain of this name is a mass of magnetic iron, 1,560 feet high, on the frontier of Europe and Asia. According to the legend this remarkable lodestone mountain was revealed to the Russians by a Vogul, who was burnt alive by his countrymen, for having thus attracted the foreigners into the land. Strong native magnets are now seldom found here, the best specimens coming from Mount Kashkanar (2,800 feet), overlooking the town of Nijne-Turinsk.

The valley of the Tagil, which joins the Tura within the limits of the Perm government, is richer in metal works even than the Upper Tura basin; but the

mining industry has also been extended to the valley of the Upper Neïva, which rises a little east of the source of the Tagil in the same uplands. Here are the famous *Neviansk*, or Neïvinsk works, established in 1699. In 1702 Peter the Great secured them in "perpetuity" to the miner Demidov, including in the grant a tract of 3,212,000 acres. Like Pisa, Neviansk boasts of its leaning tower, a heavy pile lacking the elegance of the Italian structure.

Alapayevsk, east of Neviansk and on the same river Neïva, is also an active mining centre, its iron and copper works employing thousands of smelters and miners. The chief entrepôt of all these highland towns and villages is *Irbit*, at the junction of the rivers Irbit and Nitza. Originally a mere Tatar *sloboda* surrounded by waste tracts and woodlands, Irbit took rank as a city in 1775, in recompense for its loyalty to Catherine II. during the insurrection of Pugachov. Since then it has not greatly increased in size, but during the month of February it becomes every year the Nijni-Novgorod of Asiatic Russia. Its empty houses are now filled with visitors from every part of the empire, numbering, according to the state of trade, from 12,000 to 20,000. Since the beginning of the century its trade has increased more than tenfold, and its exchanges amounted in 1879 altogether to 99,263,000 roubles. Irbit has gradually become the great provision market for the whole of Siberia, and through it European Russia supplies its inhabitants as far as the Pacific seaboard with all their requirements, receiving in exchange chiefly furs and hides. But the fair once over, Irbit sinks to the position of a dull provincial town. The neighbouring iron mines have lost much of their former importance, though the "Irbitskiy-zavod" smelting works, 40 miles south-west of the town, still produce about 12,000 tons of iron yearly.

After watering the Turinsk district and receiving the Nitza, the Tura flows north-east towards *Tumen*, one of the great cities of Siberia. This place was already famous before the arrival of the Russians, and its old walls figure on Herberstein's map of 1549. The Siberian Tatars still know it by the name of Jenghiz-tora, or "City of Jenghis," attributing its foundation to the Mongolian conqueror. Situated at the converging point of numerous routes, at the western extremity of the chief water highway in Siberia, and forming the eastern terminus of the great birch avenue planted by Catherine II. from Nijni-Novgorod to the Ural mining districts, Tumen has become one of the chief trading-places in the Ob basin. Like Irbit, it has its yearly fairs, at which the exchanges in tea and other merchandise amount to upwards of a million roubles. But it is chiefly a manufacturing town, growing yearly in importance, and already claiming to be the "Manchester of Siberia." It produces most of the carpets sold in Russia, and amongst its numerous factories are steam-engine works, a tannery in which hides are prepared to the yearly value of about a million roubles, and building yards for the steam fleet of the Ob basin. The surrounding towns and villages also produce quantities of wooden wares, household utensils, and boxes of all sorts, and about 50,000 sleighs and carts are annually made in the district. Tumen is the chief depôt of the steamers plying on the Ob, although connected with the river navigation only during the spring floods. In summer the boats are seldom able to ascend

the Tura, and usually stop at *Artomonova*, on the Tobol, midway between Tumen and Tobolsk.

Still less advantageously situated for fluvial navigation is *Yekaterinburg*, lying at the eastern foot of the Urals, which, however, here rise scarcely more than 650 feet above the town. But it is conveniently placed for overland communication, and forms at present the Asiatic terminus of the European railway system. It also occupies a central position between the northern and southern mining districts of the Urals, 6 miles south-west of *Beryozov*, or *Beresovskiy-zavod*, which till recently derived much importance from its gold and platinum mines, discovered in 1820. The metal works of Verkh-Isetskiy, forming a north-western suburb of the city, and those of Nijne-Isetskiy a little south-east of it, have also acquired considerable importance, especially from their blast furnaces. Yekaterinburg, which is one of the finest cities in the empire, occupies a gentle slope on the banks of the Iset, which here broadens to a navigable lake fringed with verdure. Lofty white houses, with green sheet-iron roofs resembling slabs of malachite, rise above the picturesque wood cottages, and are themselves overlooked by the domes and belfries of the churches, from which a view may be had of the Urals in the distance. Founded in 1722, Yekaterinburg soon rose to importance as the centre of an extensive mining district. It is the residence of the inspectors of mines, forming a sort of government apart, and its stone polishers forward to Europe porphyry vases, malachite and rhodonite tables, and a thousand objects in topaz, jaspar, and rock crystal, all admirably cut, but betraying little variety of design. The Government mint, where copper and even gold and platinum coins were struck, has been abandoned; but its loss has been compensated by large machinery and other private works. Here are a meteorological observatory, and the Society of the "Naturalists of the Urals," which publishes interesting memoirs on the geology, flora, fauna, and ethnology of these highlands. The society was founded in 1872, and in 1876 it had already nearly seventy stations in various parts of the Urals, whose comparative tables are of great use in acquiring a knowledge of the local climate. In the neighbourhood are many objects of interest, such as the

Fig. 187.—Yekaterinburg and Berezovskiy.
Scale 1 : 430,000.

6 Miles.

YEKATERINBURG.

numerous blocks of stratified granite between 2 and 3 miles south of Lake Shartash, and from their form known as "stone tents." One of the rocks on the river Pishma bears inscriptions in an unknown language, and in a character far more elegant than those in use amongst the Altaï and Yenisei peoples.

The other towns east of Yekaterinburg in the Perm government are *Kamishlov* on the Pishma, *Dalmatov* and *Shadrinsk* on the Iset. In the south the most important place is *Troïtzk*, conveniently situated on the Orenburg-Omsk route at the junction of two fertile valleys, and on the edge of the steppe. But since the Orenburg-Tashkend route has become the main highway between Europe and Turkestan, Troïtzk has lost much of its former importance. In the Shadrinsk district is the small town of *Krestoroye*, whose fair, next to that of Irbit, is the best attended on the Asiatic slope of the Urals. Its exchanges amounted in 1875 to 8,350,000 roubles.

Kurgan, on the left bank of the Tobol, but beyond the limits of the Perm government, recalls the former existence of a royal burial-place 560 feet in circumference, and surrounded by a wall and ditch. After extracting a quantity of gold and silver objects the Russians converted the mound into a fortress, which, however, they were obliged to abandon, owing to the erosions of the Tobol. The military colony was then removed 5 miles farther down, and gradually developed into a flourishing trading-place. *Yalutorovsk*, also on the left bank of the Tobol, was founded in 1641 on the ruins of an old Tatar city, and is a busy place during the horse fair. The surrounding district, the most densely peopled in Siberia, is very productive in corn, cattle, tallow, and hides.

On the Ishim, which flows parallel with the Tobol to the Irtish, are several important places. *Akmolinsk*, capital of a district near the sources of the river, is much frequented by the surrounding Kirghiz tribes. Farther west is the old Cossack stanitza of *Atbasar*, at the junction of the Ishim and Atbasar. *Petropavlosk*, on the right bank of the Ishim, although beyond the Kirghiz territory, is the centre of a large trade with the nomads, over 3,000 of whom have here settled down in sedentary communities. *Ishim*, about midway between Petropavlovsk and the mouth of the river, is visited by over 10,000 strangers during the December fair, at which the exchanges amount to 5,000,000 roubles. In the surrounding lacustrine steppe there are over 300 basins, which are alternately lakes well stocked with fish and rich meadow lands. They were dry in 1841, began to be flooded in 1859, and in 1864 the water had everywhere resumed its normal level.

The first place on the Irtish deserving the name of town is *Ust-Kamenogorsk*, situated, as indicated by its name, at the "issue of the mountain gorge," near the mining region. The copper mines of *Bielo-Udorskiy*, in the valley of the Glubokaya to the north-east, employ about 1,000 hands. Lower down, *Semipalatinsk*, capital of a government, stands on the left bank of the river, but has often had to change its site, owing to the erosive action of the stream and the encroachment of the sand dunes. Its Russian name of Semi-Palat, or "Seven Buildings," is due to the seven neighbouring heaps of ruins, formerly used as temples by the surrounding Kalmuks. In the adjoining Ablaïkit valley are the ruins of another Buddhist

temple. The large trade formerly carried on by Semipalatinsk with the Chinese town of Chuguchak has been almost completely suppressed by the recent troubles in Kashgaria. Its commercial relations are now chiefly with Tashkend and Bokhara.

Below Semipalatinsk there are no towns till we reach *Omsk*, which occupies both banks of the Om at its junction with the Irtish, and on the main Siberian highway in the zone of Russian colonisation, between the Southern Kirghiz and Northern Tatar populations. Omsk is the present capital of West Siberia, and its old fortress has become the residence of the civil and military administrators. Here are a military gymnasium with 350 students, a museum of natural history, and since 1877 a branch of the Russian Geographical Society.

East of Omsk the main route ascends the Om valley to *Kainsk*, midway between the Irtish and Ob, and in the centre of the Baraba steppe. Amongst its inhabitants are several hundred Jews, banished to this part of Siberia for smuggling. For a distance of 600 miles along the Irtish between Omsk and Tobolsk the only town is *Tara*, standing on the left bank, opposite the confluence of the river Tara. It is a much older place than Omsk, and was formerly the head-quarters of the military expeditions organized to reduce the Kirghiz. Peter the Great caused 700 of its Raskolnik inhabitants to be butchered for refusing to take the oath of allegiance, and since then Tara, lying beyond the great Siberian highway, has remained nearly stationary.

Tobolsk, former capital of all Asiatic Russia, and still the chief town of a government, is also a decayed place, taking for population the sixth rank only amongst Siberian cities. Yet it occupies a position of vital importance at the confluence of the Irtish and Tobol, in the very centre of the West Siberian fluvial navigation. But it lies beyond the 58th parallel, near the limits of cereal vegetation, and has ceased to be a station on the main Siberian highway, which was formerly deflected northwards to pass by the governor's palace, and which now runs from Tumen, through Yalutorovsk and Ishim, straight to Omsk. But it still remains the rallying-place of the Russians banished to Siberia, and the seat of the "administration of the exiles." When visited by Falk in 1772 it had a population of 15,000, which has since then remained nearly stationary. All its old Tatar and early Russian monuments have disappeared, destroyed either by the Cossacks or by the two fires which wasted the place in the eighteenth century. But with its painted domes and kreml, or citadel, commanding the lower quarters on the banks of the Irtish, Tobolsk still remains one of the most imposing cities in Siberia. Its fish market is one of the best supplied in the world, annually drawing about 8,900 tons from the Lower Ob, for which the Ostiak fishers receive probably no more than 10,000 roubles, but which realise on the spot at least 1,000,000 roubles.

Below Tobolsk there are no towns on the Irtish; but *Samarova*, on a hill commanding the alluvial plains of the Irtish and Ob, which are lower down connected by a network of canals, is a noted place, occupying the site of a former Ostiak capital. But the aborigines have long been replaced by the Russian *Yamshchiki*, or "conductors," engaged in the transport trade.

GENERAL VIEW OF TOBOLSK.

GENERAL VIEW OF OMSK.

North of the Altaï and the Barnaûl plains there are no large towns on the banks of the Ob. *Kolivan* has acquired some importance as a fishing station and market for farm produce. But the centre of trade in this region is *Tomsk*, near the right bank of the Tom, some 600 miles above its junction with the Ob. Of all the Siberian cities Tomsk probably most resembles a Russian town in the architecture of its houses, the splendour of its shops, and its general commercial activity. The Cossacks of Tomsk have been the true conquerors of Siberia, and their services were recognised in the seventeenth century by the title of "Sons of Boyards," conferred on them by the Czar. Some hundreds of gold miners find profitable employment in the auriferous districts of the south and south-east, which, though less rich than those of East Siberia, can be worked at less expense. In population Tomsk ranks with the four largest cities in Siberia, and is destined soon to become the intellectual centre of Asiatic Russia as the seat of a university. Although over fifty years ago richly endowed by private munificence, the first stone of this institution was not laid till 1880. To it will be attached a botanic garden on extensive grounds given for the purpose by a citizen of the place. Like all Siberian towns, Tomsk covers a vast space, its straggling suburbs spreading for miles in all directions. In 1876 the landing-place for steamers was over 4 miles from the centre of the city.

East of Tomsk the two towns of *Mariinsk* and *Achinsk*, in the Chulim basin, have some importance as stations on the great Siberian highway. But for hundreds of miles down the Ob the so-called towns are little more than groups of huts. Between Tomsk and the Irtish confluence, a distance of over 960 miles, nothing occurs except the two wretched towns of *Narim*—that is, "swamp" in Ostiak—below the Ket delta, and *Surgut* at the mouth of the little affluent of like name. About 420 miles still farther down stands *Berozov*, the northernmost town in the Ob basin. It lies on the Sosva, a tributary of the Little Ob from the Urals, and has become famous as a place of banishment. Here died Menshikov, Ostermann, and the two Dolgorukiy, besides hundreds of less known, though no less generous patriots, doomed to a slow death in this glacial land, far from friend and foe alike, torn from all the joys of life and fierce struggles for freedom. Berozov is on the verge of the habitable world, producing nothing but a few hardy vegetables, yet deriving some importance from its trade in furs, though even these are now chiefly restricted to squirrel skins. Farther north there are only a few fishing stations, of which the best known is *Obdorsk*, consisting of about sixty houses and a chapel, at the mouth of the Ob. In this Arctic region the climate is too severe for working the gold, platinum, and iron mines of the surrounding hills. In summer the surface thaws only to a depth of from 8 to 12 inches, and in winter the glass falls to $-12°$ and even $-16°$ Fahr. The Obdorsk fair, where the Ostiaks and Samoyedes formerly sold their furs, is much less frequented than formerly. The natives now prefer to trade with Turukhansk, on the Yenisei, where they run less risk of losing the produce of a year's chase for a few quarts of brandy.

Mangazeya, founded by the Cossack hunters farther east on the Taz, has ceased to exist, and has been succeeded by the hamlet of *Tazovka*.

IV.—YENISEI-BAIKAL BASIN.

The waters flowing through the Yenisei to the Arctic Ocean belong, like those of the Ob, to two different basins. The Ulungur and Black Irtish are properly Mongolian rivers, which have been enabled to drain northwards through a break in the surrounding mountains. In the same way the Selenga rises in the uplands fringing the Gobi desert, and pursues a winding course through a depression of the hilly plateau, whence flow east and north-east various head-streams both of the Lena and Amur. The Selenga falls into the great transverse trough now filled by Lake Baikal, and through a depression lying at an angle with this vast lacustrine basin the Angara also escapes to the Yenisei. The emissary flows at first parallel with the Lena, and these two rivers were probably at one time connected through a lateral breach. But the Angara is now deflected northwards, descending in a series of rapids through a still imperfectly excavated channel. After receiving the Oka and other tributaries it takes the name of the Upper Tunguska, as if it were really a different stream, and after describing a great curve towards the north and west, it flows in a gentle current to the Yenisei.

The Yenisei itself rises in a mountain cirque east of the Altaï range, escaping from its upper basin through a succession of defiles in the parallel Sayan ridges, and flowing thence regularly northwards to the Arctic Ocean, uninterrupted by the numerous geological breaks obstructing the course of its great affluent from the east. Hence it rightly retains the same name from its entrance into Russian territory to its estuary, and it thus resembles the main trunk of a tree, which throws off a side branch longer, stronger, and more ramified than itself.* In the history of their inhabitants the two basins of the Western Yenisei and of the Baikal also differ from each other, and require to be studied apart.

BASIN OF THE WESTERN YENISEI.

The Yenisei receives its first waters from the Chinese district comprised between the Sayan and Tannu-ola ranges north and south, and bordered eastwards by the lacustrine plateau where rise the farthest head-streams of the Selenga. None of the rivers rising in this district, which has a mean elevation of 4,000 feet above the sea, have received from the natives the name of Yenisei. But the true main stream seems to be the Bei-Kem, which is the "Great Yenisei" of some writers, and which is fed by numerous brooks from the Eastern Sayan, better known as the Ergik-targak taiga. The Khua-kem, or "Little Yenisei," rises farther south on the heights near the great Lake Koso-gol, and receives on its left the waters flowing from the Tannu-ola valleys. The united stream, which now takes the name of Ulu-kem, forms the real Yenisei, which soon receives the Kemchik from the converging point of the Altaï, Tannu, and Sayan ranges. Although there seem to be no glaciers in these highlands, some of the crests rise

* Probable length of the Western Yenisei, 2,580 miles; probable length of the Selenga-Angara-Yenisei, 3,300 miles. Probable area of drainage, 1,180,000 square miles.

here and there above the snow-line, while most of them are snow-clad for eight months in the year. Those of the Ergik-targak are certainly 10,000 feet high, and passes leading over this chain from Russia to China are at elevations of 7,400 feet.

With its northern incline the Upper Yenisei basin really forms part of Siberia in its climate, flora, fauna, and general aspect, but not in its inhabitants, who are exclusively of Mongol stock. The slopes are covered with forests of the Siberian cedar and larch, beyond which stretch thickets of the rhododendron and other Alpine plants, while the rivers and lakes are fringed with poplars and willows.

Fig. 188.—Upper Yenisei Basin and Minusinsk Steppes.
Scale 1 : 3,400,000.

The deer is chased in the upland forests, and the grassy plains are honey-combed with the underground dwellings of the tarbagan. Still the transition from climate to climate may be observed in many places, and especially in the east, where the uncertain water-parting between the Yenisei and Selenga is strewn with lacustrine basins, some filled with salt water, others containing magnesia and mineral substances in divers proportions.

About half a mile below its junction with the Kemchik in Russian territory, the "Great River"—for such appears to be the meaning of the Tungus word Yoanesi, whence the Russian Yenisei—passes in a *bom*, or narrow defile, through a

series of parallel ridges, running south-west and north-east on the Sayan plateau. About 10 miles from the frontier the stream enters a gorge scarcely 100 feet wide and 330 yards long, through which a lake was drained which formerly filled the whole upper basin. Here the current is so rapid that it scarcely ever freezes, though a little lower down usually ice-bound for over five months in the year. Further on the stream is interrupted by other rapids in its passage through the parallel chains, which are all separated from each other by deep valleys formerly filled with water. Of these rapids, none of which entirely obstruct the navigation, the most dangerous is the "Great Rapid" below the junction of the Us. Beyond the Sayan highlands the scene changes abruptly, grassy steppes succeeding to mountain crags. Between Krasnoyarsk and Yeniseisk some reefs and rapids also cover the surface with foam, and cause a din that drowns the boatmen's voices. The longest of these is nearly 7 miles in length, and is traversed by boats descending the stream in about half an hour. But on the whole throughout its middle and lower course the Yenisei is a placid stream, with a fall scarcely exceeding that of the Ob. At Krasnoyarsk, over 1,800 miles from its mouth, its mean elevation is only 530 feet above the sea, and at Yeniseisk, below the rapids, 230 feet.

Like the Ob, the Yenisei traverses some tracts dry enough to be regarded as steppes. Here the Tatars pitch their tents as on the Turkestan plains. Thus the Abakan steppe stretches for over 30 miles along the left bank above Minusinsk, while west of the same place the Kachinskaya steppe comprises most of the plain skirted southwards by the river Abakan. But these dried-up tracts are the exception in the Yenisei basin, where the main stream is swollen by numerous affluents, especially from the east, making it one of the great rivers of Asia even before its junction with the Upper Tunguska. Here its mean breadth varies from 5,000 to 6,500 feet, expanding to 4 miles during the spring floods, when it increases in depth from about 40 to 82 feet. Its volume, apparently about equal to that of the Danube, is more than doubled by its union with the Upper Tunguska, and under the pressure of this current the main stream is deflected westwards. For several miles the turbid and yellow waters of the Yenisei flow in the same bed side by side with the dark blue Tunguska, gradually merging in a common alluvial stream. The fauna of the two rivers also differs, the sturgeons and sterlets of the Tunguska having black backs, while those of the Upper and Lower Yenisei are of a greyish colour.

Below the confluence the Yenisei, like most Siberian rivers, flows between a low bank on the left and a steep cliff on the right. But below the Sini junction both sides are high, and the stream is here obstructed by a rocky barrier, causing it to expand to a basin about 10 miles in circumference, and studded with over fifty islets. This is the only obstacle presented to the navigation of large steamers throughout its lower course, which in many places is over 130 feet deep.

In the forest region below the Great Tunguska the Yenisei is joined by two other Tunguskas, the Podkamenyaya, or "Highland," and the Nijnyaya, or "Low," besides the Bakhta, Yelogui, Kureïka, and other affluents scarcely inferior in volume. The Nijnyaya is about 1,620 miles long, and over half a mile wide at

its mouth. In a warmer latitude it would form a magnificent water highway between the Yenisei and Lena basins. For it rises near the latter river, with which it at first runs parallel, approaching it, near Kirensk, to within 13 miles, but then turning abruptly north-west to the Yenisei. The Taimura, one of its affluents, traverses a region abounding in coal beds, one of which has been consumed by underground fires.

In its lower course through the glacial zone of the tundras the Yenisei receives no more affluents. But here it partakes more of the character of a marine estuary, the stream being at times arrested by the joint action of the tide and north wind 300 miles from its mouth, and expanding over a space 30 and even 40 miles wide. In this vast fresh-water fiord, studded with low islands and exposed to the full violence of the fierce winds sweeping over the tundra, the navigation is very dangerous for the ordinary flat-bottomed fishing-smacks, which seldom venture far from the banks. But before reaching the sea the stream again contracts, and is only 12 or 14 miles wide at its mouth. During severe seasons it is open for navigation only about fifty days, from July 10th to the end of August. Its waters are less rich in fish than the Ob, although certain portions, especially of the estuary, abound in animal life, including multitudes of tench, lote, perch, taken chiefly as food for the dogs, besides sturgeon, salmon, and other more valuable species. Nearly all the river population are fishers, agriculture and stock-breeding being but slightly developed except in the Minusinsk steppes. Hence the navigation of the Yenisei has hitherto been of little use except for transporting the produce of the fisheries. Yet the region traversed by it abounds in minerals, forests, and game, whilst the southern districts might produce food enough for the sustenance of millions. The navigable waterway, which, exclusive of the Baikal, cannot be estimated at less than 5,000 miles, was used so late as 1876 only by a flotilla of four steamers and two sailing vessels under 50 tons burden. Most of the other craft consisted merely of flat-bottomed boats, rafts, and pontoons taken in tow by the tugs. After bringing down corn and other produce from the south most of these craft are taken to pieces, and the timber used as fuel or for building purposes. But since Nordenskjöld has found the way from Europe to the mouth of the Yenisei, and discovered the excellent harbour of Dicksonhavn on its right bank, at the entrance of the estuary, trade cannot fail to be developed on this great artery of Central Siberia. Some experimental trips have even already been made by English, Scandinavian, and Siberian traders.

Inhabitants—The Chûdes.

Doubtless the Yenisei basin, more mountainous in the south, deficient in "black loam," lying at a greater distance from European Russia, and stretching less towards the south, can scarcely ever sustain so large a population as that of the Ob. At the same time all the region comprised between the Sayan highlands and the confluence of the Yenisei and Angara has already been almost exclusively settled by Russian communities, scattered in groups along the river banks and the great

Siberian overland route. The antiquities found in this country show that it formerly possessed a considerable population. When visited by Gmelin in 1735 the gold, silver, and copper objects found in the graves were numerous enough to be met with in every household. In the Abakan steppe, on both banks of the river of like name, and along the Yenisei for 120 miles below Abakansk, the barrows are grouped in hundreds and thousands, especially in the fertile tracts. Certain parts of the steppe are like vast cities of the dead, where the mounds are so crowded together as to look at a distance like herds of gigantic animals. Amongst them are some of recent origin, which are still being erected on the occasion of great religious ceremonies, not for the purpose of depositing in them the remains of renowned heroes, but only as receptacles of coats of mail, stone axes, copper implements, coins, and other objects dating from heroic times. Most of them, however, are ancient kurgans 26 to 30 feet high, containing either chiefs with their arms and horses, or entire families, or heaps of human remains thrown in, doubtless, after some great battle. These are the so-called "black" kurgans. But the most remarkable tombs are those enclosed by circles of stones, some of which are carved in the form of men, women, and children. These sculptured stones are by the Russians called *baba*, the same name that they give to the nude figures surmounting the kurgans of South Russia. But most of the figures have disappeared, and, judging from what remains, they would seem to represent men of Mongol race, and the camels that accompanied them on their expeditions. The populations whose remains were consigned to these tumuli were in other respects more civilised than the Europeans of the corresponding bronze epoch. Amongst their jewellery have been found genuine works of art in beaten gold, besides porcelain and bronze vases embellished with bas-reliefs of animals, such as the argali, deer, eagle, wolf, and winged monsters like griffins or flying dragons. Numerous metal mirrors occur, resembling those still used by the Buriats and Mongolians in their Buddhist rites; but iron objects are found only in the barrows of recent origin. Figures of the duck, an animal worshipped by the ancient Finns, are common. According to the general tradition the men buried in these tombs are "Chûdes," who consigned themselves alive to the grave on the appearance of the birch, emblem of Russian dominion, in their woodlands.

The Soyots and Karagasses.

The indigenous population of the Upper Yenisei basin, both in China and Siberia, consists of Mongols, Finns, Tatars, diversely intermingled, and confounded one with the other by nearly all travellers. Most of the peoples living in the Ob basin are also met in various parts of the Yenisei region. Thus the Tatars stretch eastwards to the gates of Minusinsk, Kansk, and Krasnoyarsk. The Ostiaks roam over the forests on both banks of the river north of the Angara confluence, while the Samoyedes pitch their tents in the tundras about the estuary. Some Samoyede families are even found on the northern slope of the Ergik-targak, in the valleys of the upper affluents, who are supposed to have remained in their primeval homes

after their kinsmen had migrated northwards. At the time of Castren's visit in 1847 these representatives of an ancient race, known in the country as Motors, and calling themselves Tubalars, seemed to be dying out. Small-pox had made great ravages amongst them, and most of the survivors had migrated to Chinese territory. Others have been absorbed in the surrounding Tatars and Soyots, and the old Samoyede dialect had perished even before the race itself.

The Soyots, said to number from 7,000 to 8,000, are Finns like the Motors, and speak a dialect resembling that of the Samoyedes. They are divided into several distinct tribes, occupying two or three valleys in Russian territory; but they are far more numerous in the Kem and Selenga basins within the Chinese frontier. Having had formerly to pay their tribute of furs to both Governments, they have obviated the inconvenience by withdrawing farther from the borders, and leaving a wide unoccupied space between. The Soyots, who seem to have become mixed with the Tatar race, have mostly regular features, with straight nose, small and very slightly oblique piercing eyes, broad forehead, pointed chin, an intelligent, resolute, and thoughtful expression. They practise several industries with very great skill, notwithstanding their primitive implements. They extract iron from the ore, casting it into bars or bullets, make their own powder, and repair their rifles. They also navigate the lakes and rivers on rafts, but occupy themselves rarely with agriculture, being mostly nomads, whose chief wealth consists in their sheep, cattle, yaks, and horses. The latter are very shapely and much valued by the Minusinsk dealers. Milk, cheese, butter, and kumiss form their chief diet, but they are unfortunately much too fond of *aïrak*, a strongly intoxicating fermented drink.

More numerous than the Soyots are the Uriankhs, who call themselves Donva, and who are supposed to be of Tûrki stock. They resemble this race in features, and most of them speak Tatar dialects, but, unlike most Tûrki people, they are Buddhists in religion. Their tribes intermingle with the Soyots, though the bulk of them dwell farther east in the Bei-kem valley, on the shores of Lake Koso-gol, and about the head-streams of the Selenga and Angara. Some are hunters, but most of them are stock-breeders, living, like the Soyots, mainly on a milk diet. But they excel them as agriculturists, cultivating barley and millet, and irrigating their fields with canals over a mile long, skilfully traced along the mountain slopes. But under a feudal system the race has become impoverished. The *dainan*, or chief, and the aristocrats own herds of several hundred and even a thousand cattle, while all the rest are nearly destitute and reduced to a state of serfdom. Every lord is surrounded by retainers, who attend slavishly to all his personal wants, and the nation has thus become divided into two hostile political factions. The poor are drawn by their interests towards the Russians, whereas the nobles and lamas, belonging mostly to the same families, and enjoying the same privileges, look for support from the Chinese and Mongol officials. Hence Russian explorers are very badly received by the dainan, and Mongol influence is still paramount throughout his territory. The Darkhats, or "Freemen," who dwell farther south and belong to the same ethnical group, have been assimilated even in speech to the Mongolians. On the west and south-west are the Soyons, of the same stock, but more or less

mixed with Kirghiz blood, and also assimilated in speech and habits to the Mongolians. The Shamanist practices of the "Yellow" Soyons, who dwell together in Mongolia, are being gradually adapted to the orthodox Buddhist rite, and monasteries of lamas are already springing up in the midst of these nomads. Amongst the Darkhats there are no less than 1,400 monks in a total population of 7,000. The old customs have been better preserved by the "Black" Soyons, who live nearer to the Russian frontier, and who, like the Soyots and Kalmuks, prefer the ox to the horse for riding, and even hunting. On these beasts they are said to hold their own against the best horsemen.

A district occupied exclusively by Russian colonists separates the Soyot and Uriankh territory from the Yenisei Tatar domain. The Karagasses of the Northern Sayan slopes have already dwindled to a few hundred, and their women are even said to be no longer fruitful. The Sagai, Kachines, and other Tatar peoples, who occupy the basin of the Abakan to the number of 14,000 or 15,000, are being gradually Russified. Most of those living in the steppes west of the Yenisei are very comfortable, many of them counting their cattle not by heads, but by herds, of which some possess as many as seventy, averaging fifty head each. The Yenisei Tatars belong mostly to the Orthodox Greek Church; but beneath this outward show the primitive ideas continue to flourish, and the evil spirit is still worshipped.

The Tunguses.

North of the Russians and Yenisei Tatars the dominant people are the Tunguses, already mentioned by the Dutch writer Massa in 1612, and who now occupy nearly all the region limited westwards by the Yenisei, but especially the basins of the three rivers Tunguska named from them, and most of the Amur valley. Kinsmen of the Manchus, and, like them, originally from the Amur basin, they gradually stretched eastwards to the Yenisei and northwards to the Frozen Ocean. The Samoyedes call them Aïya, or "Young Brothers," a term pointing to their recent arrival and peaceful relations with the old inhabitants of the land. About the middle of its course they have crossed the Yenisei, advancing along the left bank into the Ostiak domain. But towards the centre of their territory, between Lake Baikal and the Lena, they are hemmed in on the north by the Yakuts, southwards by the Buriats and Russians. Being mostly nomads, the Tunguses number probably not more than 60,000 or 70,000 in the whole of Siberia, but their courage, activity, and ready wit give them a decided moral pre-eminence over the other natives. The most general national name is Donki, which, like that of Boye, one of their chief tribes, means "Men." The Russian form Tungus is either a Tatar word meaning "Lake People," or more probably from the Chinese Tunghu, "Eastern Barbarians."

According to their pursuits and mode of life the Russians have divided them into "Horse," "Cattle," "Reindeer," "Dog," "Steppe," and "Forest" Tunguses. Some families who have become settled have adopted Russian ways, and, thanks to their superior intelligence, make better husbandmen than the other aborigines.

TUNGUS TYPES AND COSTUMES.

But most of the nation are still in the hunting state, roaming through the woods without tents, and seeking temporary shelter in caves or the hollow trunks of trees. A little sleigh carries all their effects, and with this they will journey for thousands of miles, from the Chinese frontier to the Frozen Ocean, always retracing their steps with unerring certainty over hills, plains, rivers, and steppes. The least mark left by the hunter on his track is recognised and respected by his kinsmen. A broken branch will suffice to indicate the route to follow, while a stick thrown across the path bars farther progress in that direction. Arrows suspended in divers ways speak a language intelligible to the nomad; but nature also addresses him in a multitude of ways, which he interprets with astonishing sagacity. Signs meaningless for the European point to the presence of game, the neighbourhood of a glade or running water, while their superstition sees in many trifling phenomena omens for good or evil, for luck or failure in the chase. Breaches of the traditional code must be avoided. In difficult mountain or marshy paths silence is religiously observed, and libations must be offered to the evil spirits, should the offering cost them their last drop of brandy. The woman in labour flees to the forest and is confined unaided, at the risk of perishing in the snow or rain. The new-born infant receives the name of the first stranger, man or woman, crossing a burning brand at the threshold. Usage immemorial also requires that bodies be not buried, but exposed on the branches of trees, with the head always turned towards the west.

Of Mongol appearance, the Tunguses, with their round features, high cheek bones, and small oblique eyes, are distinguished especially by the square form of the head. Owing to their active habits and extreme sobriety they are generally thin and wiry even in old age, gliding swiftly along on their snow-shoes, and passing like a flash over the thin ice, where the heavy Ostiak would not dare to venture. They are fond of racing, wrestling, and other physical exercises, and their impromptu songs are always accompanied by animated gesture. They also indulge in the dance with such vigour, and even frenzy, that spectators of other races are often carried away by the enthusiasm of the moment to take part in the whirling motion. Then the clownish Ostiak, bounding round with bearish step, presents a sorry sight by the side of the nimble Tungus, with his graceful and noble carriage. These nomads are also noted amongst all Siberians for their tasteful and elegant attire. Those of the Tunguska especially wear a costume of admirable grace and lavish splendour, at once bold in design and displaying an astonishing perfection in the details of its embroidery and fringes. Yet any other native would look ridiculous in such a garb. Surprising resemblances in the designs of the materials seem to show that the Tunguses must at one time have maintained constant intercourse with Japan. The practice of wearing armour and bucklers, formerly so common throughout Siberia, has fallen into disuse, and the ordinary weapon is now the *palca*, a long shaft terminating with a sharp blade, on which the hunter leans in guiding his sleigh. The tattoo patterns seen on many faces cannot compare in the happy disposition of the lines with those of most Polynesians. Amongst the women the chief design consists of four parallel curves traced on both

cheeks from the corner of the eye to the side of the mouth, with transverse lines outside the curves, bearing a vague resemblance to little butterflies with folded wings.

Since the time of Brand, who visited Siberia towards the close of the seventeenth century, all travellers have been loud in their praise of the mental qualities of the Tunguses. Full of animation and native impulse, always cheerful even in the deepest misery, holding themselves and others in like respect, of gentle manners and poetic speech, obliging without servility, unaffectedly proud, scorning falsehood, and indifferent to suffering and death, the Tunguses are unquestionably an heroic people. They neither exact the price of blood, nor do they practise the vendetta, like most barbarous tribes. But in accordance with the code of chivalry they challenge each other to mortal combat, and their meetings are regulated with a scrupulous ceremonial. Dwelling in the same climate as the cunning Yakut, the dull Buriat and profoundly silent Samoyede, the Tunguses afford a striking instance of the persistence of racial traits under the most diverse surroundings. For their manner of life has been little modified by contact with the Russians. Christians in appearance, they have preserved their religious practices, usages, and rude freedom. "Our faith bids us live and die in the woods," they say; and so, content with little and extremely temperate, they can suffer hunger and thirst for days together uncomplainingly, and even endure the privations of their long winters with unabated cheerfulness. For their wants one animal, the reindeer, one tree, the birch, amply suffice. The reindeer gives them his flesh in food, his skin in dress, his sinews and entrails as thongs and cords, his bones to carve into implements of all sorts. From the birch comes the bark wherewith to make their boxes, baskets, cradles, and tents. If at times they accompany the Russian explorers for days and weeks, and regularly partake of their meals, in this they do but comply with the national custom, which makes hospitality the first of duties, and permits all to share alike in the food of each. Amongst them there were formerly neither rich nor poor, although the sense of property, consisting in the exclusive right to hunt in certain districts, had already been fully developed. But now each family has its herd of reindeer, and its credit, or rather debt, account with the Russian or Yakut trader.

Notwithstanding their buoyant character and innate force of resistance, the Tunguses, hemmed in, so to say, between the Russians and Yakuts, are threatened with extinction as an independent nationality. Although their numerous offspring are well cared for, the rate of mortality is very high, and whole families are at times swept away by small-pox, measles, scarlatina, and especially famine, their most formidable foe. Always exposed to this danger, they speak of death by hunger with remarkable indifference, as if such an evil were quite in the natural order. Of the former camping grounds in many forests nothing is now to be seen except the remains of cabins and biers suspended between two boughs a few yards from the ground. The Tungus tribe, which opposed the longest resistance to the Russians, has entirely disappeared, leaving nothing behind except its name, given to the village of Taseievskoye, on the river Usolka, north of Kansk.

Topography.

Their geographical position, relatively mild climate, and fertile soil must secure for some of the Yenisei regions an important future. But meantime there are in this basin but few towns, and, with the exception of three or four, even these are little more than villages. *Minusinsk*, lying farthest south, and centre of a considerable trade between the Upper Yenisei and Mongolia, had 4,000 inhabitants in 1863, and during the ten following years this number had not increased by 500. It is well situated on the right bank of the Yenisei, in one of the richest mineral districts in Siberia. Since 1835 the tributary streams have been worked for gold,

Fig. 189.—Rock Inscription on the Banks of the Yenisei.

of which about 8,775,000 roubles' worth was collected between 1845 and 1859, the present mean annual yield being about 600,000 roubles. The lead and copper mines of the neighbouring mountains have not been utilised since the abolition of forced labour, the attention of the free miners being directed mainly to the precious metal. Nor have the coal beds any present value, owing to the abundance of wood, the few industries, and lack of easy communication. The salt lakes near Minusinsk are used for the local supply alone, and the iron ores are worked only by the Soyots, the produce of the Urals being amply sufficient for the present demands of the Russians of the Yenisei. But in certain parts of these highlands there is not a single mountain but affords ample evidence of the activity of the ancient native

miners. In the Uba valley, north-east of Minusinsk, there occurs a block of native iron weighing over 1,700 lbs., which Pallas believes to be of meteoric origin.

The village of *Abakansk*, 48 miles below Minusinsk, was an important stronghold during the last century, before the foundation of Minusinsk. Here the cliffs on the left bank are covered with well-preserved inscriptions, two in Tatar, and all the rest in Mongolian. Hundreds of stone tombs disposed in twos occupy a large space in the neighbourhood. Lower down another rock, near the village of Novo-

Fig. 190.—Region of the Yenisei Gold Mines.
Scale 1 : 2,000,000.

30 Miles.

selovo, also bears ancient writings, and a cliff on the banks of the Sizim is inscribed with hieroglyphics representing birds, wild beasts, and horsemen. Another rock on the Yenisei, near Krasnoyarsk, is covered with figures of men painted in red.

Krasnoyarsk, or the "Red Cliff," capital of the Yenisei government, stands at the foot of the red Afontova escarpments, on a peninsula formed by the junction of the Yenisei and Kacha. Standing on a navigable river where it is crossed by the great Siberian highway, and forming the administrative centre of a vast province, Krasnoyarsk has had a rapid development, its population having more than doubled

since the middle of the century. It is the largest place between Tomsk and Irkutsk, but, owing to its bleak climate, is avoided by travellers in winter. Although the neighbouring coal beds are not worked, it is the chief trading-place for all the surrounding mineral districts. In the vicinity are some iron and sulphur springs on the banks of the Kacha.

Yeniseisk, though taking the name of the river, ranks only as the second place on its banks. It stands on the left side, below the Upper Tunguska junction. But this advantageous position is neutralised by the fact that it lies almost beyond the zone of Russian population, in the midst of lakes and swamps, on a low ground often covered with water and ice during the thaw. More than once it has been threatened with complete destruction. During the last century, when goods were forwarded mostly by water, Yeniseisk had one of the most important fairs in Siberia; but the current of trade has been diverted southwards by the opening of the great overland route. Yeniseisk stands in a rich iron district, and farther north

Fig. 191.—From Krasnoyarsk to Kansk.

Scale 1 : 2,300,000.

30 Miles.

the streams flowing to the Yenisei between the Upper and Mountain Tunguska are worked for gold. Here are collected over two-thirds of all the gold found in the Yeniseisk government, though the yield of late years has fallen off.* Over one-fourth of the wretched gold-washers are invalids, and of the 16,000 hands usually employed about 1,000 yearly attempt to escape. The districts of Kansk and Nijne-Udinsk, watered by the various streams flowing from the highlands between the Yenisei and the Angara, are also auriferous, and the salt springs north of Kansk yield from eleven to twelve parts pure salt.

North of Yeniseisk we enter the wilderness, in which the few wretched hamlets fringing the river banks become rarer and rarer as we proceed northwards. Nevertheless *Turukhansk*, one of these villages, ranks as a town, where the officials, famished almost as much as the unhappy exiles themselves, administer the affairs of the nomad Tungus, Ostiak, Samoyede, and Yakut tribes, and the few settled traders and fishers of the district. Turukhansk, capital of a territory with scarcely

* Yield of gold in the Yeniseisk government (1875), 4,950,000 roubles; hands employed, 16,450.

2,200 settled inhabitants, in a space three times the size of France, contains of itself alone over one-fifth of the entire population. Its little houses are scattered over an island at the confluence of the Turukhan and Yenisei, here communicating with vast tundra lakes. A harbour, a few stores and sheds, await the trade that must some day be developed between Europe and Siberia by the Yenisei estuary. Meanwhile a peltry fair attracts the Samoyedes and Ostiaks of the extreme north between the Ob and Lena. The severity of the climate and the frozen surface have hitherto prevented the working of the vast deposits of graphite discovered east of Turukhansk, between the rivers Turyeika and Nijnyaya Tunguska. One alone of these beds is said to contain at least 200,000 tons of graphite, which at the London exhibition of 1851 was recognised as the best in the world.

Near the small port of Dundinka, on the Lower Yenisei, recently visited by Nordenskjöld, there is a colony of skoptzi, banished from Russia, and all of Finnish origin.

THE BAIKAL-ANGARA BASIN.

The Selenga, main head-stream of the Upper Angara basin, rises, like the Irtish and Yenisei, on the southern slope of the mountains skirting the Siberian plains on the south, and, like them, it escapes northwards through a gap in those highlands. But the Yenisei falls regularly from its source to its mouth without forming any lacustrine reservoir, and the Irtish expands only in the shallow depression of Lake Zaïsan, whereas the Selenga plunges into the deep trough of the Baikal, which is completely encircled by mountains. Moreover, the Angara, forming the outlet of this lake, is probably of comparatively recent origin, and does not constitute a direct continuation of the Selenga. As an inland sea Lake Baikal completely separates the Siberian basin which drains northwards from the southern region, which has received the name of Transbaikalia.

The mountains rising west of the great lake, and which throw off the head-streams of the Selenga southwards, and those of the Angara northwards, belong to the Sayan system, itself a continuation of the Altaï. The Ergik-targak chain, forming the Russo-Chinese frontier-line, is attached to the Baikal highlands by a group of lofty summits, which rise above the line of perpetual snow, but which were none the less unknown till recently. In 1832 Carl Ritter was unaware of their existence, and although the chain is mentioned by Humboldt under the Mongolian name of Mondorgon-ula, it is by him confused with other groups, and reduced to one-third of its true elevation. It was ascended for the first time by the naturalist Radde in 1859. Here the Munku-sardik, or "Silver Mount," is covered with everlasting snows and ice, whereas all the other crests are bare in summer—a fact that can only be explained by the presence of a warm atmospheric current blowing from the west towards these uplands. The Mongolians never ascend the Silver Mount, always stopping at the place of worship lying at the foot of the southern glacier. Here they bathe their temples in the rivulet trickling from the glacier, make their obeisance several times before the invisible genius of the

Fig. 192.—The Munku-sardik Group.

mountain, murmur the prescribed orisons, and throw a few drops of brandy towards the four cardinal points. This glacier, the only one on the Mongolian side of the

mountain, covers an area of about 4 square miles. But on the Siberian or northern side there is a double glacier of much larger size, which sends its advanced moraines 2½ miles from the crest, damming up the waters flowing from the blue and icy Lake Yekhoi. From the narrow extremity of the Munku-sardik the view stretches west, north, and east over a world of crests, crags, and woodlands, while the gaze is lost southwards in the boundless region of the desert, blending in the distance with the sky. The blue waters of the great Lake Kosio (Koso-gol), and the large forests on the lower slope of the mountain, contrast with the bright red tints of the bare escarpments and the snowy peaks. In the middle of the lake, which stretches southwards for a distance of about 70 miles over an area estimated at 1,320 square miles, the eye is arrested by the white rocks of the Dalai-kui, or "Navel of the Sea," an island sacred in the eyes of all Buddhists.

The pyramidal Munku-sardik forms an important water-parting. On the south-west rise various streams which, from affluent to affluent, ultimately find their way to the Yenisei. In the north-west the river Oka, whose first waters are collected in Lake Yekhoi, skirts the foot of the Ergik-targak range, thence trending north and north-eastwards to the Angara, and forming with it the Upper Tunguska. In the east the Black and White Irkut also rise in the neighbourhood of the sacred Mount Nuku-daban, whither the natives bring their offerings of furs, bits of cloth, gun flints, and old coins. Lastly, in the south the head-streams of the Selenga are collected in the great reservoir of Lake Koso-gol. But the streams flowing in these various directions differ greatly in volume, the annual snow and rain fall varying considerably according to the aspect of the hills and the atmospheric currents. Thanks to the deposits of graphite discovered by Alibert about 1850, and lying above the zone of forest vegetation, meteorological observations have been regularly taken on one of the highest points of these highlands. Alibert's mine contains many thousand tons of excellent graphite, already well known to artists, and now the property of a large pencil manufacturer near Nuremberg. Unfortunately the severity of the climate has occasioned the temporary abandonment of the works.

The Tunka Highlands.

To the same orographic system belong the mountains stretching eastwards from the Munku-sardik, and which slope down to the banks of the Irkut near the western extremity of Lake Baikal. These are the *Goltzi*, or "Treeless Rocks" of Tunka, north of which other parallel chains are developed between the Oka and Angara valleys. The Goltzi range presents a striking contrast to the Sayan highlands. The jagged peaks of the Goltzi rise pyramid above pyramid north of the intervening Irkut valley, south of which the Sayan range is developed in long rounded crests. Yet both are composed of the same crystalline and palæozoic rocks, and lava streams have been discharged from each. Lava beds skirt a great part of the Irkut valley, and though there may be no true volcanic cones in this region, molten rocks have been erupted in the Tunka valley near Lake Baikal, as well as on the banks of the Selenga in Transbaikalia. Deceived as to the character of certain so-called trachyte rocks, many travellers have exaggerated the impor-

tance of volcanic action in this part of Siberia, though it is remarkable enough that any igneous phenomena should have occurred so far from the sea-coast, near the great fresh-water basins of Lakes Baikal and Koso-gol. The only undoubted craters that have here been discovered are the two "cups" in the Sayan highlands about the sources of the Jun-bulak, a left tributary of the Oka near the Chinese frontier. Rising 415 feet above a plateau itself about 6,600 feet above the sea-level, these heights seem to be of slight importance in the midst of the surrounding mountains; but the lava stream that has flowed from the chief crater is no less than 12 miles long. Huge blocks of granite rest on the bed, which seem to show that it dates from the pre-glacial period. Earthquakes occur most frequently, and with the greatest violence, in the region of the Irkut, Angara, Baikal, and Munku-sardik,

Fig. 193.—Munku-sardik and Kamar-daban.
Scale 1 : 3,500,000.

60 Miles

and Irkutsk itself lies in the chief centre of seismic action in Siberia, as Khojend does in that of Turkestan. Great subsidence of the ground has also taken place in the Selenga and Angara valleys.

The Tunka highlands are clothed by the same forest vegetation as the Sayan, and both systems are inhabited by the same animal species. But the lower range skirting the Irkut valley on the south differs in its forest-clad crests, and in some features of its geology and zoology, from the Sayan. With it begins the system of the Baikal, which develops at the south-west corner of the lake into the Kamar-daban, highest of all the mountains on the shores of the Baikal. It has an elevation of 7,100 feet, and is covered in winter with vast quantities of snow.*

* Various altitudes in the Munku-sardik system, according to Radde:—

	Feet.		Feet.
Culminating point	11,600	Alibert Mine	7,450
Base of the Southern glacier .	10,750	Nuku-daban	7,200
Upper limit of flowering plants .	10,660	Lake Koso-gol	4,470
Upper limit of forests . .	7,400		

Lake Baikal.

The heights encircling Lake Baikal have a mean altitude of not more than from 3,000 to 4,000 feet. Although presenting from the surface of the water the appearance of distinct parallel chains, they must be regarded rather as forming part of the hilly plateau whose ridges stretch south-west and north-east between the Lena and Argun basins. The lake itself partly fills two cavities in the plateau. For it really forms a double lake, whose two nearly equal basins were formerly separated from each other by a chain, of which the large island of Olkhon on the west side, and the "Holyhead" promontory on the east, are surviving fragments. The great subsidence of the land that has here taken place is shown by sheer cliffs continued in a vertical line to a vast depth below the surface. Most savants

Fig. 194.—The "Cup" at the Source of the Oka.

formerly regarded the formation of the lake as due to a crevasse of volcanic origin. But a geological study of its shores has proved that igneous eruptions have had but a slight effect in modifying its outlines. No lava streams have been discovered except in the plain at the western extremity of the lake, north-west of the Kamar-daban. Nearly all the hills overlooking its waters are composed, like those of the southern plateau, of coarse-grained granites, syenites, crystalline schists, and porphyries, alternating here and there with old chalks, sandstones, and very thick beds of conglomerates.

Lake Baikal, whose name is probably derived from the Yakut Bai-khai, "Rich" or "Fortunate Sea," is known to the Mongolians by the name of Dalai-nor, or "Holy Sea," and the Russian settlers themselves give it the same title (*Sv'atoye More*), pretending that no Christian has ever perished in it except in a state of mortal sin. But all alike, Mongols, Uriankhs, Buriats, and Russians, are indig-

nant at hearing it being called a lake. For them it is a fresh-water sea, equal almost in majesty to the salt ocean itself. The fishermen formerly assured Gmelin that it was very angry at being called "lake," and they were themselves always careful to speak of it in terms of marked respect. Thus it is that everywhere barbarous peoples, helpless in the presence of the unbridled forces of nature, have learned to fear and worship them. A number of dangerous reefs are regarded as sacred, and when the wind was favourable for landing, the natives were formerly wont to come and offer their sacrifices. One of these holy rocks is the throne of the "White God," near the outlet of the Angara. But the most hallowed spot is the headland projecting from the east coast, and terminating with the cliffs of Cape Shaman, rising in the form of columns or rudely fashioned statues some 150 feet above the surface. In the eyes of the Tunguses these rocks are gods, rulers of the waters that bathe their feet, protectors of the birds hovering in the vast cavity of their mouths.

But whether sea or lake, the Baikal is the largest fresh-water basin in Asia, and in most of the popular geographies in Russia it still ranks as the first lake in the world, as if the great inland seas of North America and Central Africa had not yet been discovered. But though yielding in extent to these vast lacustrine basins, it surpasses most of them in volume,* for it is of prodigious depth, its lowest cavities reaching far below the level of the sea. Even close in shore, at the foot of the sheer cliffs, it is over 330 feet deep, while the mean is estimated at upwards of 850 feet, and the extreme, as determined by Dibowski and Godlewski in 1876, at no less than 4,550. For distances of several miles there stretch uniform plains 3,950, 4,000, and 4,050 feet below the surface, and the soundings have recently revealed a rocky ridge over 3,300 feet high, running parallel to the Irkutsk and Transbaikal shores, in the centre of the basin, which is thus divided into two secondary depressions. Navigators had often spoken of elevated grounds where they had even been able to cast anchor in bad weather. But no credence was attached to these reports till Dibowski and Godlewski showed that the tradition rested on actual facts, and that there is a depth of only 200 feet above the sub-lacustrine ridge. Near the great cavities rise the highest coast mountains, so that here, as in the ocean, the depth of water corresponds, as a rule, with the elevation of the shores. The water is shallowest and the land least abrupt in the part of the basin to the north of the island of Olkhon and of the "Holyhead" promontory, and the depth is little over 200 feet in the "Little Sea," as the gulf is called, which is formed by the island of

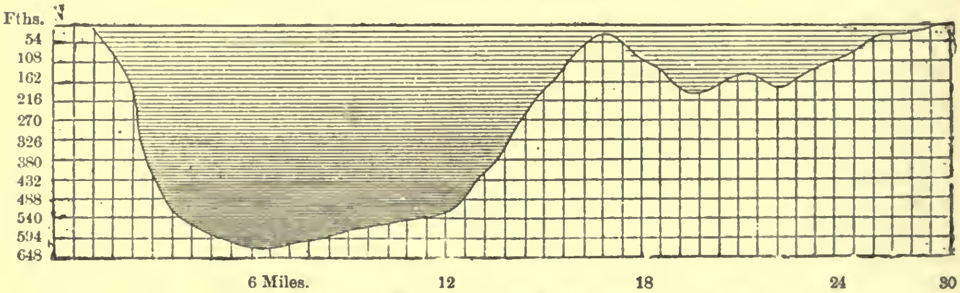
* Comparative table of the great fresh-water lakes:—

	Area. Sq Miles.	Extreme Depth. Feet.	Mean Depth Feet.	Approximate Volume. Cubic Kil.
Baikal	14,000	4,550	850	8,743
Victoria Nyanza	33,000	—	—	—
Tanganyika	15,000	—	—	—
Superior	32,000	1,030	500	17,820
Michigan	23,000	860	300	5,130
Huron	22,000	700	230	3,900
Erie	9,000	200	50	369
Ontario	6,500	600	400 (?)	1,944
Geneva	230	1,100	500	87

Olkhon and the mainland. Thanks to its enormous volume, the temperature of the lake is very uniform, varying at the surface no more than 17° Fahr. throughout the year.

Notwithstanding its vast size and volume, the present lake is merely a remnant of a far larger basin. The steep sides and more sloping beach everywhere show traces of former and higher levels. The shingly strand that occurs at intervals all round the coast and in the valleys of the influents shows that even recently the lake was at least 20 feet higher than at present. But in still more remote times it was much larger, communicating with the old lake of the Irkut valley through a channel distinct from the fissure through which the Angara now flows to the Yenisei. The portion of this emissary comprised between the Baikal and its confluence with the Irkut was formerly a mere rivulet flowing to the Irkut, and separated by a sandstone barrier from the great lake. But while the work of erosion was going on north of this barrier, the pressure of the waters of the basin was acting on the south, till a time came when an opening was effected in the rocks, through which the lake made its way, and converted the Angara into one of

Fig. 195.—Depths of the Western Baikal.



The depths are represented in decuples of their real proportions.

the great rivers of the world. The very word Angara is said to mean in Tungus "water escape," and may possibly recall the sudden outburst through the fissure in the northern edge of the lake. The channel was gradually enlarged and deepened, and the lake thus reduced by the outflow to more narrow limits. The difference between the summer and winter levels scarcely now exceeds 3 or 4 feet, though in exceptional years the floods produced by the melting snows cause a rising in summer of from 6 to 7 feet. These slight variations of level, as compared with those of Maggiore and other Alpine lakes, are due to the fact that the inundations of the Selenga, Barguzin, Upper Angara, and a hundred other influents have time to subside before reaching the common reservoir, while they receive less sedimentary matter than the Alpine lakes. Hence the water is far more transparent than that of Maggiore or Geneva. The smallest pebble is perfectly visible 36 feet below the surface, while the large rocks disappear from sight only at depths of 50 or 52 feet. Even after heavy rains the water remains clear near the strand and the rivulets.

To the same absence of alluvia from the surrounding granitic valleys is due the sharpness of outline presented by the angles and crests of the coast hills. The

shores still seem to preserve their original architecture, and the view of the steep cliffs, for unknown ages resisting the erosive action of the water, seems to carry us back thousands of centuries to a still more primitive state. Yet there is no absolute lack of recent formations, especially towards the shallow northern extremity of the basin. Here the Upper Angara and some neighbouring streams unite in a common marshy delta, separated from the open water by lines of dunes from 6 to 30 feet high, and mostly overgrown with thickets of trailing pines and other timber. In the southern basin the Selenga delta also breaks the old coast-line by its alluvial deposits.

The cliffs assume their grandest and most picturesque appearance along the western shores, and especially between the island of Olkhon and the outlet of the Angara. Here the irregular tower-shaped headlands rise from 700 to 1,000 feet above the surface, clothed here and there with pines and shrubs. Between these wave-beaten and grottoed headlands the strata of the softer formations have partly fallen in, revealing through their openings the amphitheatre of the riverain ranges towering above the terraced plateaux. But, in spite of their majesty, these landscapes seldom fail to produce a depressing effect on the traveller. No dwellings, no cultivated lands, nothing is anywhere visible except savage nature and the wilderness. As we skirt its desolate shores the aspect of the hills undergoes little change, headland succeeding headland, rocky inlet to rocky inlet, in endless monotony, the scene changing so slightly that we seem to be still in the same place. The forests covering the slopes and narrow strips of shore consist exclusively of pines, firs, the larch, and other Siberian species. Nowhere do we meet the ash, the elm, or oak, whose abundant foliage, varied tints, and majestic forms impart such a charm to the scenery in the West. The dull and monotonous green of the pine becomes in the end as depressing as the blackish crags themselves, rusted in the distance by the red blossom and brown stems of the rhododendron. The poplar *balsamifera* alone, with its green branches resembling those of the walnut, recalls the leafy trees of Europe.

Lake Baikal is too vast to be perceptibly affected by its tributaries; hence the surface waters drift from shore to shore entirely according to the direction of the atmospheric currents. The general movement towards the south-west, spoken of by Hess, lasts only during the prevalence of the polar wind, which, in the southern part of the lake, is called *barguzin*, because it seems to come from the bay to which the river Barguzin flows. The contrary wind, blowing from the west and south-west, takes the name of *kultuk*, from the village standing at the western angle of the lake. Besides these more prevalent winds, sudden squalls and storms sweep down through the valleys and side gorges, frequently changing the direction of the waves, or raising streaks of surface foam across the heavy ground swell.

Lake Baikal freezes regularly in winter from about the end of November to the month of May. But fierce gales often break its icy fetters. Even when frozen throughout to the normal thickness of from 4 to 5 feet, and crossed without danger by swift postal sleighs, the crust never ceases to heave with the liquid mass supporting it. The traveller hears the muffled sound of the waters rolling beneath

their solid roof, and producing a slow wavy motion. At times a sudden shock causes the ice to vibrate with a metallic sound, or to break into long narrow fissures cleared by the trained horses at a bound. It is probably through these temporary rents that the air penetrates to the deep, enabling the fishes and seals to live through the long winter in the ice-bound waters.

To the winter frosts succeed the fogs of spring and summer. When the cold water, liberated by the storms from the crust separating it from the air, begins freely to diffuse its vapours throughout space, the lake immediately becomes like a vast seething caldron. Every morning in spring it is covered by a dense haze, which, in the afternoon, is dissipated with the increased temperature of the surface waters. For the same reason the atmosphere again becomes bright about the end of summer and beginning of autumn, when the temperature of the waters approaches, and at last even surpasses, that of the air.

The Baikal fauna is relatively poor in distinct species. The lack of alluvial lands on the coast, and the rapid fall of the cliffs into depths of several hundred yards, have prevented the development of crustacea and other in-shore animals. Aquatic birds are consequently also somewhat rare. Few birds are seen in summer besides the fishing cormorants and flocks of mews, one species of which is elsewhere unknown except in Iceland and West Europe. But in spring and autumn the surrounding woodlands are temporarily enlivened by flights of birds of passage migrating to and fro between Central Asia and Siberia. The lake abounds chiefly in varieties of the sturgeon and salmon, especially the so-called *omul* species. But the myriads of fishes spoken of by Pallas and other early travellers as ascending from the lake have disappeared, and so great is the destruction of spawn by the fishermen that whole species are threatened with extinction, unless measures be taken for their preservation. Some have already disappeared at some unknown period, and are now found only in the Little Frolika, or "Trout Lake," the *Dara-chanda amut* of the Tunguses, situated near the northern extremity of the great basin. This reservoir is extremely deep, and abounds in trout, which have not yet been found either in Lake Baikal or in any of its tributaries, and in its fauna are included many other peculiar species of fish. The seals are not evenly distributed over the whole of Lake Baikal, being mainly confined to the west coast. In summer they are met chiefly on the east side of Olkhon Island, whereas in autumn they frequent the southern shores between the Barguzin and Selenga Rivers. Whether belonging to the oceanic fauna or altogether to a peculiar species, they are undistinguishable from the *Phoca fœtida* of Spitzbergen. Being eagerly pursued for their skins, sold at large profits to the Chinese traders, they seldom show themselves above the surface, nor do they swarm on the beach like those of the polar seas, but bring forth their young on ice floes.

An inland sea, where fishing is decaying, where there are no villages or any centres of industry, is naturally but little navigated. The first steamer seen in Siberia was no doubt launched on its waters in 1844, but only for the local service between the Irkutsk coast and the Selenga delta. All the trade of the lake is concentrated in this corner, through which travellers and merchandise are

forwarded from Siberia to China and the Amur basin. Before the introduction of steam, the sailing vessels, buffeted by the winds or lost in the fogs, often took over a fortnight to make the passage of about 60 miles across the lake. During the time intervening between the open navigation and sleighing the traders follow the land route round the western extremity of the lake, along the foot of the Kamar-daban range.

Lake Baikal drains a region estimated at about 128,000 square miles, of which the Selenga basin in Mongolia and Transbaikalia comprises at least two-thirds. The semicircle formed by the contour of this basin, a vast plain covered with a brown and porous porphyry resembling lava in appearance, is no less than 1,530 miles in circumference. Here the main stream, which rises in Lake Koso-gol, at the foot of the Munku-sardik, and which, after receiving various names, at last takes that of the Selenga, describes a large curve some 660 miles long. This river is navigable for flat-bottomed boats throughout its lower course below the junction of the Orkhon, and the Kiakhta dealers make use of it to forward their teas. Thus from the Chinese frontier to the Arctic Ocean, for a distance of over 2,700 miles, an uninterrupted navigable waterway may be followed from the Selenga to Lake Baikal, and thence through the Angara and Yenisei to the sea. The Selenga receives some large tributaries, notably the Uda from Transbaikalia, whose broad valley, descending from the Stanovoi range, begins at a short distance from the Amur. The alluvial plain formed by the Selenga at its mouth skirts the shores of the lake for a distance of over 18 miles, and here the river ramifies into eight or ten branches, varying in relative importance according to the erosions and floods. Recently the surface of the delta subsided over a considerable space.

The Angara Water System.

The Selenga, the Barguzin, and the Verkhnaya Angara, traversing the mountainous country of the Tunguses, jointly with other smaller affluents and the rains, discharge an excess of water into the lake, which is carried off by the Angara, one of the great rivers of Asia, with a volume of certainly not less than 105,000 cubic feet per second. Emerging from a wide bay, whose shores are covered with larch groves, its seething waters encircle the "Shaman Rock," and flow rapidly through a bed falling from 20 to 30 inches in the mile, beyond which they are joined by the Irkut, Kuda, Kitoi, and Bieleya, without appearing to be greatly swollen by these affluents. So swift is the current that its deep blue and almost black waters sweep by the cliffs of Irkutsk after its tributaries have been covered with a thick crust of ice. Long after the intensely cold winter has set in the stream remains free from floes, but is wrapped in a dense fog almost concealing the surface from view. The Angara begins to freeze only after the glass has stood at — 20° Fahr. for several days; but then it becomes ice-bound so rapidly that it may be safely crossed in twelve hours after the appearance of the first crystals. At the break-up the floating masses are dashed violently against the still frozen crust of the more placid stream lower down, and are accumulated at the entrance

Fig. 196.—The Angara below the Padunskiy Rapid.

of the gorges, where they are at times heaped up over 130 feet above the surface. When these masses give way they are carried down, together with fragments of rock torn from the cliffs along the banks of the river.

Of the defiles the most famous is that in which the stream descends in rapids, and even forms amidst the reefs veritable falls avoided by ordinary craft. For a space of over 40 miles below the Oka confluence the Angara, henceforth known as the Verkhnaya Tunguska, rushes between its granite and syenite walls over a series of nine rapids. Here the continuous uproar produced by the waves dashing against the rocky islets is heard at a distance of several miles. Yet these rapids are safely run by the steamers, the fury and din of the angry waters merely causing a passing feeling of excitement amongst the passengers. Below the confluence of the Ilim the Angara flows through another gorge, whose serpentine and basalt sides rise some 600 feet above the surface. These are its last escarpments, although beyond them the stream, unable to pierce the northern plateau, is deflected westwards to its junction with the Yenisei. Not far from the confluence it receives the large river Chuna, which drains a vast basin watered by the auriferous torrents from the Sayan highlands. Amongst the tributaries of the Angara are also some "salt" rivers, and even in one of its islands, about 40 miles below the Irkutsk, several salt springs flow from rocks everywhere surrounded by fresh water. Many coal-fields are also embedded in its rocky sides, forming a reserve of future wealth for this region.

Fig. 197.—Rapids of the Angara.
Scale 1 : 675,000.

30 Miles.

Inhabitants—The Buriats.

As on the Yenisei, the Russians are the dominant element in the Selenga valley, on Lake Baikal, and along the banks of the Angara. But many forest tracts are still exclusively occupied by the Buriats and Tunguses, from the latter of whom the Angara takes one of its names.

These two indigenous peoples present a remarkable contrast to each other. The Tungus is brave, cheerful, modest, respectful, and upright, whereas the Buriat is generally timid, peevish, rude, impassive, treacherous, and especially lazy, more so even than the tarbagan, from which animal he steals in winter its store of roots concealed in its burrows. His broad features, with their high cheek bones,

are seldom lit up with a bright open expression. He rarely opens wide his small, slant eyes, while his thick lips protrude beyond a broad snub nose. Most of the Buriats are robust and broad-shouldered, but inclined to stoutness, awkward, and of heavy carriage, like their Mongolian kinsmen. Their besetting sin is intemperance, and, as they are unable to resist the action of alcohols so well as the Russians, a glass even of the weakest brandy, or a few draughts of fermented milk, suffice to completely upset them. When not compelled by poverty to dispense with all household comforts, and dress in rags or the rude skins bequeathed to him by his elders, the Buriat is fond of display. Rugs are spread on the floor, or hung on the walls of his hut; he decks himself in a silken robe fastened by a girdle, in which he sticks his pipe and teacup. His wives and children wear embroidered garments, adorned with metal, and the horsehair tufts hanging on the breast are interlaced with mother-of-pearl beads, gold coins, bits of malachite, and silver fringes.

Like their Kalmuk brethren, of Mongol stock, and near the Chinese frontier entirely assimilated to the Mongolian nomads, the *Hunns*, or "Men," as the Buriats call themselves, speak various Mongolian dialects, and their civilisation, such as it is, has evidently come, and still comes, from the south. The men shave their heads and wear the Chinese pig-tail. The lettered classes have various religious books translated from Tibetan, Mongolian, and Tangut, and their religious practices differ in no respect from those of the Buddhists beyond the frontier. They have also their lamas dressed in red robes, with yellow head-dresses and party-coloured girdles, and they are fond of processions, musical fêtes, and frequent ceremonial gatherings. There is scarcely a single Buriat family in Transbaikalia without at least one priest, and, as a rule, every third son "enters the church." On the shores of Lake Baikal, and especially in the neighbourhood of Irkutsk, the Buriats have become Russified, and thousands of them have even accepted baptism. The two races have also become to some extent intermingled, so that while the Buriats were becoming Russians, the opposite process was also going on. In many villages it is difficult to trace the true origin of the people, especially as both Cossacks and Buriats speak both languages. In the villages the peasantry are proud of speaking Mongolian, just as in the towns the civilised Russian parades his knowledge of French. In the Baikal basin the Buriats are found in the purest state probably in the island of Olkhon, where they are seldom visited by travellers or traders.

The Tungus is a hunter, whereas the Buriat, coming from the Mongolian steppes, is above all a stock-breeder, though also a fisher on the shores of the lakes. Like the Kalmuk, he uses the ox for riding, but, unlike him, prefers the horse, and the animals of this race are perhaps the most remarkable in Siberia, not for their beauty, but for their marvellous powers of abstinence and endurance. The Buriat horses cover 30 or even 60 miles at a trot, without eating or drinking, and at the end of the journey seem still fresh. In winter it is usual to expose the horse during the night in a perfectly open court, and thus accustom him to intense cold, which would soon destroy horses of any other breed. The Buriats highly value

these inseparable companions, which bear them so swiftly over the steppe and through the forest, and from long-established usage they never kill and eat the saddle horse, but those only which have never been used as mounts. According to religious tradition the riding horse must accompany his master on his long journey beyond the tomb. But care is taken to cheat the Deity by substituting an old broken-down hack, or tethering a young steed to the grave with a slight string easily broken. Thus the terrified animal easily snaps his bonds and trots off to join the herd. "We have given him to God; God has given him back to us!" is the excuse for the pious fraud. In some districts the Buriats have also learnt from the Russians the art of hay-making and tilling the land, and in the government of Irkutsk they have even become more skilful husbandmen than their teachers. They manure and irrigate the land more regularly, and own more live stock. In industrious habits they are surpassed only by the Raskolnik colonists, the most intelligent and laborious of all the inhabitants of Siberia.

In the direction of the Tunguses the territory occupied by the Buriats is sharply defined. To the Tunguses belongs the northern extremity of Lake Baikal, whereas the rest of the lake, from Olkhon Island and the Sacred Headland to the Gulf of Kultuk, is Buriat domain. The Buriats are divided into tribes, named mostly from the district occupied by them, and subdivided into *aimaks*, each with its prince (*taisha*) and elders, forming and governing itself according to its own usages. Some of the aimaks have formed confederacies, which hold assemblies in the forest glades, or on the shores of the lakes, to discuss their common interests. The Government abstains from interfering in their local affairs and differences, except in the case of disputes between the tribal chiefs. No recruits have hitherto been raised amongst them, and although strips of the vast domain ceded to them by Catherine II. "for ever" are from time to time appropriated for the benefit of the Russian settlers, there still remains more than they can cultivate.

Proceeding from north to south, the Buriat Shamanism merges by imperceptible stages in Buddhism. The influence of Russian orthodoxy has also made itself felt, especially by the introduction into the Buriat pantheon of the legendary St. Nicholas, whose myth corresponds exactly with that of the Mongolian Tsagan Ubukgun, or "Old Man in White." Hence the image of the latter is worshipped by the Russians themselves, just as the Buriats bring their offerings for St. Nicholas to the Russian churches. Although very religious, the Northern Buriats have but a small number of shamans, being too poor to support them; but they do not fail themselves to perform all the prescribed rites before their household gods woven in camel-hair, and before the divinities of the headlands and sacred rocks on the lakes, streams, and springs, conciliating the good and evil genii by offerings of furs, ribbons, mirrors, or horsehair. In the world in which they live every object seems alive, looking down on them, listening to their prayers, animated by friendly or hostile feelings towards them. Hence the Buriat passes with a sort of awe by these formidable rocks, springs, or woodlands. For at times a single word or any unseemly laughter was sufficient to rouse their anger and stir up the sleeping storm.

The Buriats were long known by the name of Bratskiye, or "Brotherly," given to them by the Siberian colonists, doubtless through an unintentional play of words. The fort raised for their reduction at the confluence of the Angara and Oka, and which has since become a small town, still bears the name of Bratskiy-ostrog. But for the last two centuries the Buriats, who number altogether about 250,000 (114,000 in Irkutsk, and 136,000 in Transbaikalia), have given up all idea of revolting, and are now reckoned amongst the most peaceful subjects of the Czar. They had at one time even to endure a police administration of extreme rigour. In virtue of the conventions signed between China and Russia limiting the frontiers of the two empires in 1727 and 1768, the greatest precautions had been taken to prevent the migration of the nomads from one territory to the other. It thus happened that the regulations had to be most strictly enforced in the Buriat and Mongol districts, in consequence of the commercial relations carried on across the frontier of Maimachin. The intermediate neutral zone varied in width from 6 to 36 miles according to the nature of the country, and pillars were set up as landmarks all along the line. This line had to be daily visited by the respective frontier guards, and wherever any traces of trespassers were detected the spot was carefully surrounded by stones or sods, in order to preserve this proof of guilt until the culprits were denounced and punished. Wherever the frontier was crossed by streams, stakes were planted on either side, between which were stretched horsehair ropes from bank to bank. Thus no one could cross the line under pretence that he had not perceived it. These regulations were strictly observed till 1852, but since then the ropes have been neglected, the imperial seal attached to the posts has been broken, and most of the landmarks have disappeared. Twice a year some Cossack horsemen still ride up to the Mongolian stations, with their passports consisting of tablets which correspond exactly with other bits of wood taken by the Mongolians from the same block. The two pieces are fitted together, and, when all is found to be right, Cossacks and Mongols salute each other, and with mutual blessings drink copious libations to the glory of their respective sovereigns.

Topography.

The city which guards the frontier in the Selenga basin has long enjoyed a monopoly of the trade with China. In 1728, after the conclusion of a treaty of peace between the two empires, the two factories of the Russian and Chinese traders were founded at a distance of 650 feet from each other. In the south was *Mai-mei-chen* (Maimachin), or the "Chinese Mart;" in the north *Kiakhta*, commanded by the fortified Cossack station. Between the two, although both are built of wood, the contrast is complete, and it would be elsewhere difficult to find a more striking instance of diversity in the appearance of two neighbouring towns. Kiakhta resembles the elegant quarter of a European city, and its principal church, surmounted by a bright dome, is one of the richest in Siberia. Maimachin looks more like a suburb of Pekin, but much better kept than the other towns in the northern provinces of China. The doors are covered with carvings, and strips of red paper

are pasted on the walls. Singing birds are kept in all the houses, and little bells chiming in the wind hang from the upturned corners of the roof. In the intervening space between the two towns the Chinese have disposed large planks in the form of a screen, to protect their dwellings from the baleful influences of the Russian atmosphere, and on this screen was formerly painted the character meaning "good luck." Thus every noxious breath from Kiakhta and every profane expression uttered by the Russians was stopped half-way, and driven back to the desert. A "pigeon" trading jargon, which is neither Chinese nor Russian, has sprung up in this frontier emporium between the Chinese, or Nikandzi, and the Russians, or O-lo-lo-seh.

The prosperity of Kiakhta and Maimachin has greatly varied with the political vicissitudes. All trade has at times been interrupted for years, but the enormous profits of the monopoly enabled the Kiakhta dealers soon to recover their former opulence. China, which sells to Russia much more than it buys, exported at first nothing but gold, silver, rhubarb, and silks. But tea gradually became the staple of her export trade, and the Russians long boasted of enjoying the best tea in the world, thanks to the "Kiakhta Caravan," which took eighteen months to reach the Nijni-Novgorod fair from the Chinese frontier. The first-class teas brought to Kiakhta, and which the high officials and guests of the dealers are privileged to taste, have undoubtedly an exquisite flavour. They come directly from the plantations where the very best crops are raised, and these plantations are owned by the Russian dealers themselves. But adulteration goes on all along the line of the great overland route, at first at Irkutsk, then at Tomsk and Nijni-Novgorod, and lastly at Moscow. The treaty of Tien-tsin of 1858, in any case, put an end to the commercial monopoly of Kiakhta, and at the Nijni-Novgorod fair in 1880 the tea from that quarter represented no more than one-tenth of the whole amount disposed of. At present Russia receives by sea and from foreign countries most of the produce she formerly imported directly from China through Maimachin. Other routes have also been opened towards Pekin and the Yang-tse-kiang at various points of the frontier, and especially through Kobdo, so that the trade is no longer obliged to stop before the mystic screen of Maimachin. Yet, though the exchanges of Kiakhta have consequently considerably fallen off, it still does a large trade of a miscellaneous character, and the fairs of the "white month"—that is, of February—are much frequented by the Chinese and Mongolians. Including the neighbouring town of Troïtzko-savsk, lying over a mile to the north, and the residence of most of the officials, Kiakhta is the most populous place in Transbaikalia, and the richest in all East Siberia. On the Selenga is its port of *Ust-Kiakhta*, or "Kiakhta Mouth," so named from the rivulet which here joins the main stream.*

The two towns of *Selenginsk*, "Old" and "New," lying at a short distance from each other, have not the importance which might be supposed to attach to the central towns of such a large basin as that of the Selenga. But the surrounding districts are unproductive except along the banks of the auriferous Chikoi. Vast

* Average yearly trade of Kiakhta:—1824—30, 13,680,450 roubles; 1830—49, 13,313,410 roubles; 1849—59, 13,313,410 roubles. Trade of Kiakhta and the Amur district in 1872, 10,840,000 roubles.

tracts consist of sandy and saline steppes, some of whose lakes are even brackish. South-west of Selenginsk, near the south side of the so-called "Goose Lake," stands the chief temple of the Buriats, in which resides the Khamba-lama, with as many as two hundred monks, under the direct authority of a priest of Urga. Elephant tusks, huge shells from the Indian Ocean used as holy-water fonts, tiger and leopard skins, bear evidence to the constant relations formerly maintained between the Baikal lamas and Buddhists of India through Tibet.

Next to Kiakhta the chief town in Transbaikalia is *Verkhnye-Udinsk*, at the confluence of the Uda and Selenga, navigable for steamers to this point. Its port on Lake Baikal is the village of *Posolskoye*, whose houses cluster round a wealthy monastery west of the river mouths. None of the villages on the shores of Lake Baikal have yet been raised to the rank of a town. *Listvenichnaya*, on the gulf at the Angara outlet, is a landing station for the people of Irkutsk; *Kultuk*, at the western extremity of the lake, is a small fishing haven; and *Dush-kachan*, at the north end, is another little port, where the Tunguses come to pay their tribute in peltry. *Turka*, on the east coast over against Olkhon Island, is a mere thermal station with sulphur and iron springs, utilised by a few invalids from Irkutsk. *Barguzin*, lying on the river of like name and at some distance from the east coast, is important only as the capital of a district. *Tunka*, in the valley of the Irkut, is a large straggling village, whose houses are scattered over a vast space in the midst of fields and meadows.

Irkutsk, capital of East Siberia, and probably the largest city in Asiatic Russia north of Tashkend, does not stand on the river Irkut, as its name might imply. No doubt a peltry factory was established on the Angara at the junction of the Irkut in 1652, nine years after the discovery of the former river. But in 1669 the trading station was removed to the other side, at the mouth of the Ushakovka rivulet, and here was rapidly developed a city which now covers a space of several square miles. When Gmelin visited it in 1735 Irkutsk had already a population of 6,500, composed, however, mainly of officials, soldiers, traders, servants, with scarcely any women. Hence no families could be founded, and the population had to be constantly recruited with fresh elements. The mortality has at all times been higher than the birth rate, but in winter the place is crowded with thousands of gold-seekers from the surrounding upland valleys.*

The town, with its broad straight streets lined by old houses, has no remarkable monuments. It boasts of possessing the oldest building in all Siberia, but this is merely the fragment of a fort on which is legible the date 1661. On a triumphal arch erected in 1858 after the conclusion of the treaty of Aigun is inscribed the haughty legend, "Road to the Great Ocean"—words, however, justified by conquest. A section of the Russian Geographical Society, founded here in 1869, publishes important memoirs; but some of its most precious documents have perished in a recent fire, which at the same time destroyed a large part of the town. Irkutsk is

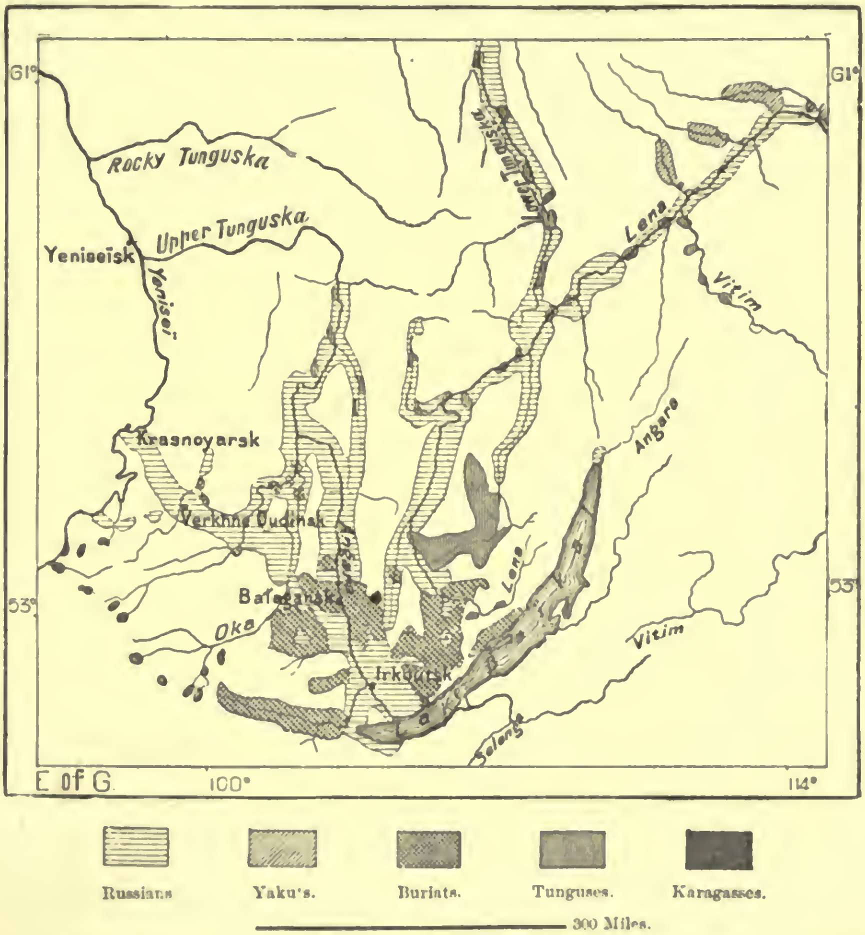
* Population of Irkutsk in 1838, 16,569; in 1857, 23,989. Excess of mortality between 1830—57, 1,425. Immigration same period, 8,845. Population in 1875, 32,514, of whom 12,870 were officials, soldiers, priests, monks, convicts, and servants.

IRKUTSK—VIEW TAKEN BEFORE THE FIRE OF 1878.

an industrial centre, and the number of its factories, amongst which distilleries, as in the rest of the empire, hold a prominent position, has been rapidly augmented. A porcelain and faience manufactory, supplied with clays of excellent quality, has been established in the district, and its products are exported to Transbaikalia. Various smaller industries, started by Polish exiles, have largely contributed to the progress of Irkutsk and East Siberia. But the city is distinguished especially as an intellectual centre above all other Siberian towns. Its inhabitants study much,

Fig. 198.—Populations of the Irkutsk Government.

According to Chudovsky. Scale 1 : 12,700,000.



discuss the current events and ideas, and at times betray symptoms of opposition with which the Government will have to reckon. Here is published the only independent periodical in Siberia.

So thinly peopled is the country that for 900 miles below Irkutsk there are no towns on the Angara, although the village of Balagansk is dignified with the name. The only town in the whole basin at a distance from the main stream is *Nijne-Udinsk*, on the Uda and on the great route to Moscow, in the centre of a

gold-washing and iron-mining region, of which it is the entrepôt. More than half of the province is still altogether uninhabited, and elsewhere the various ethnical groups of Russians, Buriats, Tunguses, Tatars, and Karagasses are scattered in isolated communities over the land. Goître is a very prevalent affection in certain parts of the Irkutsk government, especially those watered by the Lena. Compared with the whole population, the sufferers represent scarcely more than 1 per cent. of the inhabitants, but in some districts the proportion is as high as one-tenth, while in certain villages it rises to a third and even one-half of the peasantry. All these cretins are of Russian descent, the non-Slav native elements never being attacked. The cause of this immunity must be attributed, not to any ethnical privilege, but to the care taken by the Buriats and Tunguses to avoid the districts where the malady is endemic. Even in the neighbourhood of Irkutsk a magnificent valley, one of the most fertile and best sheltered from cold winds in the whole province, the Russians were surprised to find completely deserted, and hastened to settle in it. Hence all the villages here bear Russian names, and form, so to say, a sort of linguistic as well as a pathological enclave in the midst of the surrounding populations. Here goître is very common.

V.—BASIN OF THE LENA—SHORES OF THE ARCTIC OCEAN.

East of the Yenisei several important rivers take their rise in the uplands limited northwards by the basin of the Nijnyaya Tunguska, and flow thence in a winding course through the tundra solitudes to large estuaries on the Frozen Ocean. These streams, and the lakes traversed by them, are as yet known only in their main features, although they have been visited for over two hundred and fifty years by hunters and the officials to whom Ostiaks, Samoyedes, Tunguses, and Yakuts are obliged to pay their tribute of peltries. The few natives of the country are designated mainly by the names of these rivers, whose frozen surfaces are used by them as highways during the winter season. Hence the frequent recurrence of the Pyasina or Pyasida, Taimira, Balakhna, Anabara, Khatanga, and its tributary, the Boganida, in early Siberian records. But although many of these rivers are over 600 miles long, their economic value may be regarded as of no account. The official returns give less than 500 inhabitants to the vast basins of the Pyasina and Khatanga, belonging to the Yenisei government, and the Russian "villages" figuring on the maps are merely clusters of two or three *zimoviye*, or winter cabins, with an average of from five to ten occupants each. Khatangskoye, on the Khatanga, capital of all this region, consisted in 1865 of a chapel and five cabins, inhabited by nine persons. Should navigation ever be developed on the Arctic seaboard, some new centres of population will certainly spring up on the banks of the Khatanga, whose fiord, 180 miles long, offers an excellent haven, in which the first explorers of the polar seas found refuge. A comparison of the earlier charts with that drawn up by Bove, of the Nordenskjöld expedition, shows how little was known of the Taimir region, notwithstanding Middendorff's survey and the voyages of the peltry traders. The different charts show discrepancies of several degrees.

The Olenyok, whose lower course flows for over 5° of latitude parallel with the Lena, is one of the largest rivers in Siberia next to the Ob, Yenisei, Lena, and Amur. With its windings it is no less than 1,200 miles long, and empties into the sea through a mouth 6 miles wide, and from 20 to 24 feet deep, offering a good

Fig. 199.—Coast of the Taimir Peninsula.
Scale 1 : 5,300,000.

Old Coast-line.
Coast surveyed by Palander.
Route of the *Vega* and *Lena*.
Probable Coast-line.

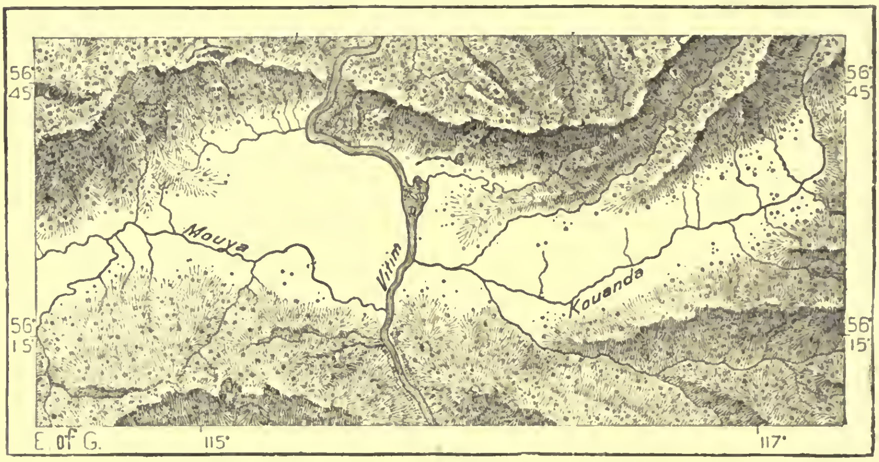
120 Miles.

harbour immediately west of the low-lying peninsula formed by the alluvia of the Lena. Explored throughout most of its course by Czekanowski and Müller in 1874, this river is not merely a waterway traversing the tundra, and fringed here and there by dwarf shrubs. For it rises in the middle of a forest region, and it

carries seawards numbers of trees, which are stranded on the shores of the large islands and mainland. Besides timber the Olenyok valley also abounds in mineral wealth, as well as naphtha springs and fishes in great variety. The camping grounds of fishers and hunters are more numerous on its banks than on the western rivers flowing through the frozen peninsula of Taimir. There is even a true village, that of Bolkalak, or Ust-Olenskoye, on its estuary. Here were found, in 1863, sixty-two half-castes descended from Yakut women and Russian exiles, who had completely forgotten their Slav mother tongue. On the right bank, over against Bolkalak, Anjou found, in 1822, the traces of the encampment where the members of the Pronchishchev expedition passed the winter of 1737, and the graves where most of them were buried. The observations made by Müller on terrestrial

Fig. 200.—Old Lake traversed by the Vitim.

According to Kropotkin. Scale 1 : 1,666,000.



24 Miles.

magnetism during his Olenyok expedition have shown that the pole of magnetic intensity lies approximately between the 64th and 65th parallels, and about 114° east longitude between the Olenyok and Vilûi.

The Lena and its Inhabitants.

The Lena, rival of the Ob and Yenisei in volume, and the most copious river in East Siberia, belongs entirely to the basin of the Arctic Ocean. It does not rise, like the Irtish, Yenisei, and Selenga, south of the ranges bordering the Mongolian plateau; hence it has no deep defiles to pass through in order to reach the Siberian plains. Its basin is connected with that of the Angara by a depression which seems to have been formerly traversed by a large river. But at present its first head-streams rise at a relatively slight elevation above the sea, the highest crests of the Baikal coast range whence they flow having an altitude of no more than from 3,000 to 4,000 feet. Nevertheless the banks of the Upper Lena are very picturesque. Its narrow stream here flows at first between schist formations, succeeded at

Kachuga by red sandstones, belonging probably to the Permian system. The steep rocks rise from 200 to 300 feet above the current, terminating in jagged and crenellated crests. These cliffs seem at first sight to be the advanced spurs of a lofty range, but when ascended they are found to form merely the edge of an almost level plateau. While those on the left bank are almost destitute of vegetation, the recesses and terraces of those on the opposite side are overgrown with leafy trees and conifers. Between these steep and rocky walls the stream flows rapidly, but is everywhere navigable below the village of Kachuga, some 96 miles from its source. North of the sandstone formations begins the so-called "Cheek Defile," where the swift current of the Lena is commanded by chalk cliffs 100 feet high, and pierced with grottoes. Here the river is no less than 70 feet deep, but navigation is endangered by its abrupt windings, reefs, and rapid flow. One of the rocks in this defile is the chief divinity of the surrounding Buriats.

Farther down the volume of the Lena is doubled, and its width increased to 1,400 feet by its junction with the Vitim. Of the two rivers the latter is, in fact, the larger, both in length and volume, flowing as it does from a region more exposed to the moist monsoons of the Pacific.* But its course being more irregular and less suited for navigation, the Lena was naturally regarded by the riverain population as the main branch. The Vitim rises east of Lake Baikal, in the hilly plateau stretching from this lake to the Yablonoi highlands, and crossed by parallel ridges running north-east and south-west. The river and its numerous head-streams flow at first in the depressions of the plateau, and then unite in a common stream through fissures opened transversely between the intervening ridges. Even where the Vitim has assumed the aspect of a large river the main valley and those of its affluents alternately follow the normal direction of the plateau from south-west to north-east, while the side valleys run south-east and north-west. Owing to its sharp windings and swift current, the Vitim remains unnavigable till it has passed the falls by which its course is interrupted, about 340 miles above its confluence with the Lena. The depressions which it traverses were formerly filled by terraced lakes, most of which have been successively replaced by alluvial plains. Some, however, still remain, notably the great Lake Oron, connected with the Vitim by a short emissary. West of the main stream travellers have had to cross extensive lava beds stretching in the direction of Lake Baikal, and one of which is no less than 70 miles long.

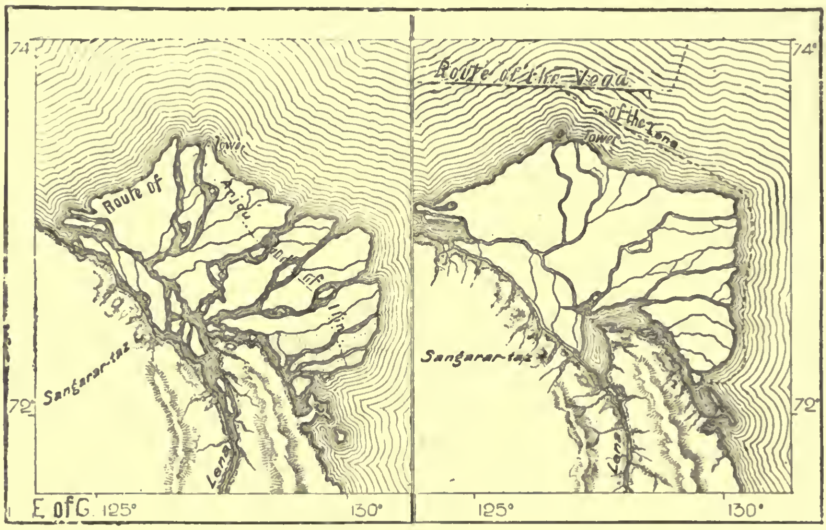
Below the peninsula formed by their confluence the united streams flow between low banks, here and there still interrupted by sandstone and chalk cliffs, rising in some places 160 feet and upwards, and reflecting their hanging branches in the stream. The most romantic scenery in this section is noted for the so-called "Colonnades of the Lena," resembling ruined castles, whose ramparts and towers stretch for several miles along the right bank. Here the Lena is swollen by the

* Length of the Lena from source to the Vitim junction .	876 miles.
" Vitim	1,280 "
" Lena-Vitim to the Arctic Ocean . . .	3,280 "
Area of drainage	1,000,000 square miles.

copious Olokma affluent, whose rapid current is felt 18 miles below the confluence. Farther down it is fed by still larger tributaries—the Aldan on its right, and the Vilûi on its left bank, marking the limits of its middle course. Henceforth ceasing to wind eastwards round the plateaux of Central Siberia, it pursues its normal north-westerly course to the Arctic Ocean in an island-studded channel, with a mean width of from 4 to 5 miles, and in some places expanding to broad inland seas. At the Aldan junction it is over 12 miles wide from bank to bank. The valley of the Vilûi may, in a general way, be regarded as forming an easterly continuation of that of the Nijnyaya Tunguska, and as extended towards the Pacific by the basin of the Aldan. The course of the Lena is consequently here crossed by a transverse depression, which at all times afforded an important highway of local migration

Fig 201.—Lena Delta.

According to Nordenskjöld. According to Wrangell and Anjou.



Scale 1 : 4,450,000.

60 Miles.

and commercial intercourse, and which now presents certain advantages to the Russians, the valley of the Aldan offering the shortest route from the Lena basin to the Pacific seaboard. Under a milder climate such a geographical position must have given rise to a first-class political or trading capital.

After the Aldan and Vilûi the great river of East Siberia has acquired its full bulk, being henceforth joined only by insignificant affluents. The forest vegetation along its banks also becomes gradually stunted and impoverished in species until they are at last succeeded by the lichens and mosses of the tundra. The islands grow nothing but scrub, though the Titari, or "Larch Island," the last of them, contains, besides the larch whence it is named, a little park of firs, birches, and poplars. Below this plot of verdure begins the vast delta of the Lena, comprising an area of about 8,800 square miles. But all this watery region is not formed

entirely by alluvial deposits. In the north-west the Khangalat district, limited on one side by the west flank of the delta, on the other by a branch of the river, is an uneven tract strewn with lakes and hills. This is, in fact, an ancient marine island, or group of islands, which have been gradually connected with the mainland partly by the alluvia of the river, partly also by the upheaval of the land. Hence the sedimentary matter brought down by the stream no longer finds a free passage to the sea in the direction of the north-west, the rocky escarpments of the Siberian coast and the Khangalat uplands here forming a natural limit to the delta. Consequently the chief branches of the Lena, with their alluvia, have been deflected eastwards, and it is here that the outlines of the islands, the winding and ramifications of the fluvial channels, are most frequently modified. Off the estuary the water is but slightly brackish, but very dangerous to navigation, averaging no more than from 30 to 45 feet deep. The form of the delta is being changed from year to year by the alluvial deposits, drift-wood, storms, and especially by the floating ice, which at the break-up sweeps whole islands bodily seawards. The charts prepared at various periods from more or less hasty coast surveys offer discrepancies far too serious to be regarded as the personal errors of the cartographers. But since the Russians have been acquainted with the delta the chief channel of navigation is that which flows round the eastern headland of the continent, opening towards the south-east on the south side of a triangular peninsula. Under pressure of the in-shore current setting west and east in continuation of the warm current from the Atlantic, the whole of the peninsula formed by the alluvia of the Lena has been deflected eastwards, thus diverting the fluvial waters to the eastern seaboard. North of the delta the Tumaskiy branch, though much obstructed with sandbanks, has maintained its channel near a landmark set up by Laptyev on its banks in 1739. The channel at the western extremity of the delta region is recognised by mariners by the Ice Cape, a headland so named from the snow and floes which here persist throughout the year at the foot of the cliffs unexposed to the solar rays.

The vast basin of the Lena has only been brought into water communication with Europe two hundred and fifty years after its occupation by the Russians. In 1878 the steamer *Lena*, commanded by the Norwegian Johannsen, penetrated the river and ascended as far as Yakutsk. The way has now been opened, and it is hoped may be occasionally used, notwithstanding the serious obstacles opposed to the navigation by the floating ice round the Taimir peninsula, and even at the entrance of the Lena mouths. In the delta branches the thaw does not set in till the end of June, or even the beginning of July, and the floes massed together and driven inland by the polar winds are said to completely block the entrance sometimes throughout the whole summer. Hence no regular navigation can be established between the Lena and West Europe until the circumpolar observatories proposed by Weyprecht have been established, and the general movement of the ice in the Arctic Ocean duly signalled to the western ports. The Lena is far less accessible to shipping than the Ob or Yenisei; but although it can never have the same importance for international trade, it none the less offers certain facilities for

effecting exchanges with the interior, where its basin offers a navigable waterway of altogether not less than 6,000 miles.*

The natural resources of this basin, whose entire population scarcely exceeds 300,000, rival those of West Siberia. The river itself abounds in fish no less than the Ob, while its forests are more extensive. It is also skirted by fertile plains and plateaux affording excellent pasture. The auriferous sands of the Vitim and Olokma are the richest in all Asia; argentiferous lead, copper, and iron ores are met in various places, although no systematic survey has yet been made of these treasures. Salt in superabundance is yielded by many lakes, saline springs, and whole mountains of chloride of sodium. Sulphur springs rise along the river banks, and are lost in the stream. Lastly, coal beds belonging to the same formation as those of the Nijnyaya Tunguska basin crop out along the banks of the Vilûi, and skirt the Lena almost uninterruptedly for over 900 miles below the "Colonnades." Some of these coal-fields, kindled by the forest fires, have been burning for years, and the smoke rising from the eminences have given occasion to the local traditions regarding the existence of volcanoes in North Siberia.

The Yana, Kolima, and Indigirka Rivers—The Arctic Islands—New Siberia.

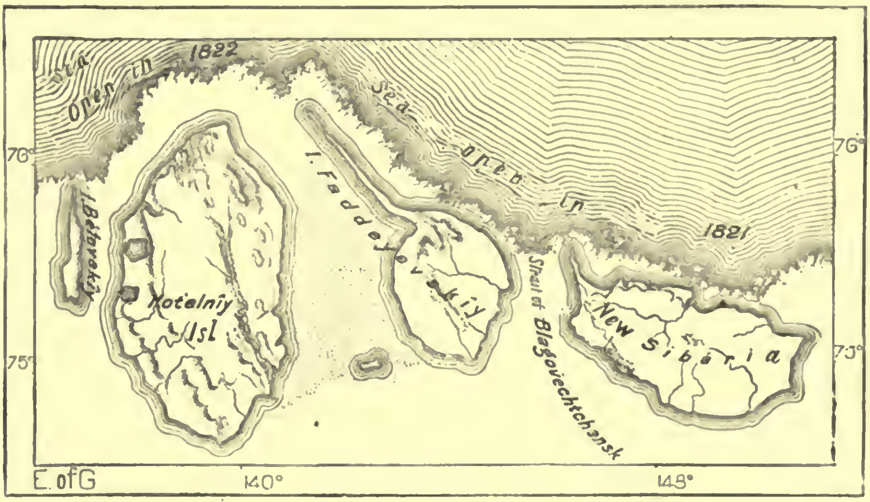
The Kharaûlakh Hills, raising their snowy, or at least snow-streaked, crests here and there to a height of 1,300 feet, separate the Lower Lena from the Yana, which flows directly to the north, and enters the Arctic Ocean through a vast delta over 90 miles broad east and west. The southern entremity of the Kharaûlakh Hills is connected by the Verkho-Yansk range eastwards with the Stanovoi plateau along the northern edge of the Aldan valley. The route from Yakutsk to Nijne-Kolimsk, on the Lower Kolîma, crosses this range by a pass 2,150 feet high, commanded by crests rising to an elevation of from 830 to 1,000 feet. The road to Verkho-Yansk, on the Upper Yana, also follows a pass 4,660 feet high, winding through a defile 660 feet deep. The Indigirka and the Kolîma, which, like the Yana, rise on the northern slopes of the Verkho-Yansk range, bear a striking resemblance to this river in the length and direction of their course, the volume of their stream, the rapids formed in their upper reaches, and the islands of their deltas. All rise in the same wooded highlands, and flow northwards through the level plain of the tundras; but, although navigable, none of them are frequented except by the fishing craft of the Yakuts, Yukaghirs, and a few Russian settlers.

	Miles.
* Navigable course of the Lena	2,920
" " Vitim	345
" " Olokma	600
" " Aldan	900
" " Amga	300
" " Maya	300
" " Vilûi	728
Total	6,085 Miles.

The most abundant in animal life is the Kolîma, which, like the two Anyûi joining its east bank in a common delta, teems with fishes of various kinds.

A few of the islands off the neighbouring coast have been known from time immemorial to the natives, and by them pointed out to the early Russian explorers. Such are the "Bear Islands," north of the Kolîma estuary, occupied during the last century by numerous winter fishing huts. The so-called "Four Pillars," one of this group, forms a conspicuous landmark with its four detached basalt columns, almost as regular as if they had been carved by the hand of man. The sailors of the Nordenskjöld expedition took them for lighthouses erected by the Russian Government for the guidance of explorers in the polar waters. Another of the Bear Islands abounds in the remains of mammoths to such an extent that when seen from the southern mainland it seemed composed entirely of the tusks of these

Fig. 202.—Archipelago of New Siberia.
Scale 1 : 4,120,000.

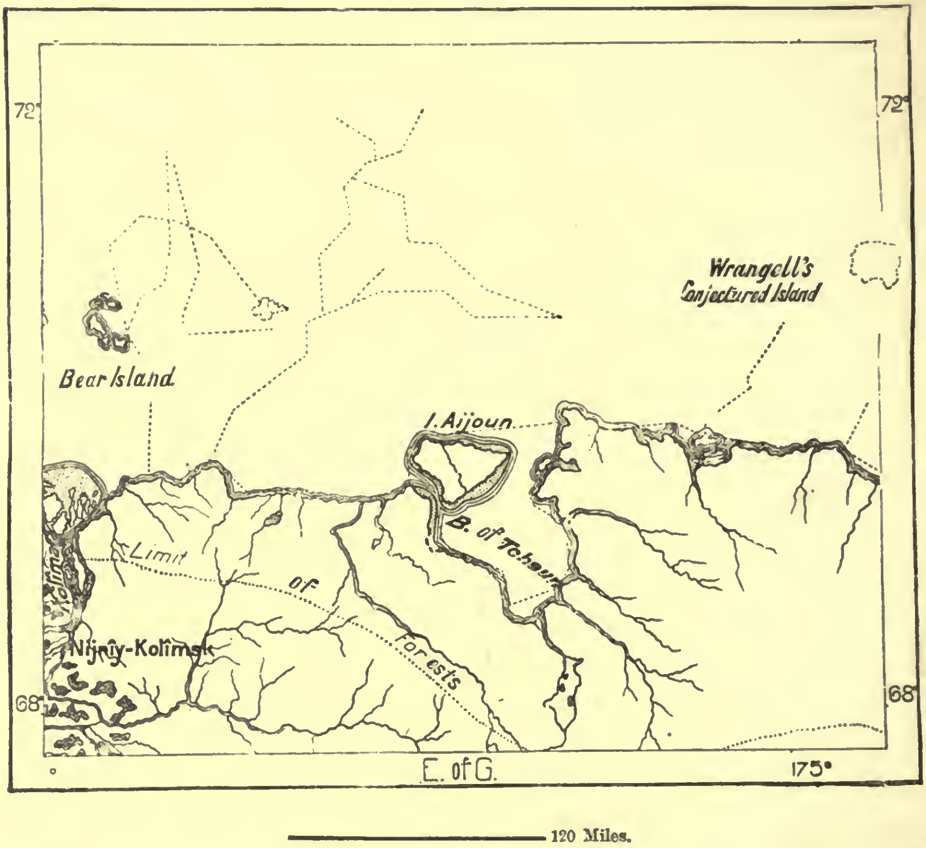


6 Miles.

pachydermata. Some of the larger polar islands said to have been discovered in the last century, or even more recently, would also seem to have been visited by the natives. Thus the so-called "Near" or "First" Island of the Lyakhov Archipelago (New Siberia) cannot have been completely unknown, as the magnificent basalt columns forming the Kiselyak headland and Mount Keptagai, several hundred yards high, are only 45 miles from Cape Svyatoï, and are consequently, in clear weather, always visible to the piercing gaze of the Tunguses and Yukaghirs. The wild reindeer, as well as the white bear and other animals, including even the smaller rodents, visit it across the ice from the mainland, and the hunters had only to follow in their wake to discover "Near Island." From this point to "Second Island" the passage is also very easy; but the "Third," or Kotyelnîy Ostrov, besides several others lying farther west, must have remained long unknown, although in one of them a Russian grave was discovered in 1811. Hedenström

here found a Yukaghir sleigh and a stone knife, pointing to a remote period, for the Yukaghirs have long used iron knives, which they procure from the Russians. Kotyelnîy Ostrov is a very large island, with an area estimated by Anjou at 8,000, and by Hedenström at no less than 24,000 square miles. It is generally connected by a barrier of reefs and extensive sand-banks with the island of Faddeyev (Thaddæus), lying farther east, with an intervening channel 560 feet wide, through

Fig. 203.—Routes of Anjou and Wrangell.
Scale 1 : 566,000.



which the tides rush to and fro with great velocity. During stormy weather the connecting sand-bank is washed by the waves.

The most recently discovered, or rather rediscovered, land in these waters is the island known as New Siberia, a name frequently applied to the whole group of islands on the north coast between the mouths of the Lena and Indigirka. It was first sighted by the trader Sirovatsky in 1806, and was carefully explored in 1809-10 by Hedenström, Sannikov, and Kojevin. It was again visited in 1820—3 during the Wrangell expedition, and since then hunters have never ceased to pass the winter there in the huts built for the purpose by Sannikov. Like the neighbouring islands, New Siberia is tolerably rich in animal species, thanks to the bridge of ice by which it is yearly connected with the mainland.

Its fauna comprises the white bear, reindeer, Arctic fox, glutton, some small

Fig. 204.—Konyam Bay: the Vega at Anchor.

rodents, and numerous species of birds. Here the hunters also find the remains of extinct animals, mammoth and rhinoceros ivory, buffalo horns, horse hoofs, and

Hedenström picked up an axe made of a mammoth's tusk. The beach is strewn with the stems of the larch and poplar stranded by the waves, but the great curiosity of the island is a row of hills fringing the south coast for a distance of over 3 miles, whose sandstone and gravel formations contain considerable masses of carbonised timber, referred by some to the Jurassic epoch, but regarded by others merely as drift-wood of recent date. Although these "Wood Hills" are only from 100 to 200 feet above sea-level, the mirage sometimes renders them visible from the Siberian coast, 168 miles off.

During his numerous exploring expeditions east of New Siberia, Wrangell had his mind steadily fixed on a northern land of which the natives had spoken, and towards which he saw the birds of passage directing their flight. A chart also, preserved amongst the foreign archives of Moscow, figured an island in these northern latitudes. During his three trips across the Siberian ice he was arrested by a *polînia,* or "clearing," such as all other Arctic navigators have found, and which have caused the name of Polynia to be given to the open sea met by Hayes in the American polar seas north of Smith Sound. The ice at the edge of the polînia was too weak to carry sleighs farther north, and the sea was distinctly felt surging in long billows underneath. Wrangell's explorations only ended in a negative result, or in the conclusion that the sought-for land could have no existence. Nevertheless it has been found in the very place where its outlines had been drawn by Wrangell on the reports of the natives. The large island, which has been named "Wrangell Land" in posthumous honour of the illustrious navigator, rises high above the water to the north of the Chukchi country, near the northern entrance to Bering Strait. Discovered for the first time by Kellett in 1849, and sighted by the whale fisher Long in 1867, this land is still only faintly traced on the charts. How far it may stretch northwards is still undetermined, nor is it known whether it forms part of the land again seen by Kellett in 1867. Mount Long, at its southernmost extremity, has an elevation of 2,500 feet, and its regular conic form has caused it to be classed with the extinct volcanoes. Nordenskjöld and Palander were prevented by the ice from visiting these islands.

The whole space stretching north of New Siberia and Wrangell Land, and between Franz-Joseph Land and the American polar archipelagos, remains to be explored, nor is it yet known whether it is partly occupied by any northern extension of Greenland, as Petermann supposed, or whether these waters encircle islands or archipelagos alone. In any case no erratic boulders are found on the northern seaboard of Siberia, from which Nordenskjöld concludes that there are no extensive lands in the Siberian polar seas, or rather that the icebergs carry scarcely any rocky detritus with them, as indeed has hitherto been admitted by most geographers. North-west of the Taimir peninsula the Norwegian navigator Johannsen discovered, in 1878, an island to which he gave the fully justified name of Ensomheden, or "Lone Land." This dreary ice-bound land has an area of about 80 square miles, terminating westwards with high cliffs, above which rises a peak 510 feet high. The sands of the low-lying east shore are strewn with drift-wood stranded here by the current. This island was probably sighted by Laptyev in 1741.

INHABITANTS—THE YAKUTS, YUKAGHIRS, AND CHUVANTZES.

The Buriats are very numerous in the southern parts of the Lena basin. Of all the natives of Siberia they have best preserved the forms of the old commune, greatly to the surprise of the Russian peasantry, amongst whom the influence of the *mir* is far less felt in private life. The poorest Buriat claims the right of bed and board with the rich, and when an animal goes to the shambles all share alike in the feast, only the owner helps himself last. Even the iron ornaments worn by the damsels in their hair are taken without ceremony from the communal smith, who sells his wares only to strangers. The corn harvest is made for the benefit of all, and all help themselves freely from the common granary. Every five or six years the Buriats of the district join in a common hunting party. Chiefs for the occasion are chosen, and they form groups of twenty or so to beat the forest; but the produce is shared equally amongst all the members of the *aba*.

But the dominant race in the Lena basin are the Yakuts, whose territory, at least twice the size of France, comprises a large portion of the Middle Lena basin, the banks of this river along its northern course, and the Arctic seaboard between the Khatanga Fiord and the Lena delta. They also dwell farther east on the banks of the Yana, Indigirka, and Kolîma, and are found here and there in isolated groups hundreds of miles from their domain proper. Thus a few Yakut families reside as far west as the Yenisei below Turukhansk, and their camping grounds are met in the south-east, even in the Amur basin. Still these northern regions of Siberia are not their primeval home. They occupied the country about Lake Baikal when the pressure of the Buriats compelled them to migrate northwards, and adapt themselves to the rigours of an Arctic climate. Many Tatar names in the Baikal district still recall their presence there. About the beginning of the seventeenth century they had to confront other enemies, and the Russian adventurers soon forced them to continue their northern movement towards the Frozen Ocean. In the middle of the eighteenth century they made their appearance for the first time in the Taimir peninsula, and during the present century they have reached the banks of the Upper Kolîma. During these migrations, which were spread over several hundred years, the Yakuts had not only to acclimatize themselves, but even to modify their social habits. Formerly a race of pastors and horsemen, like their Kirghiz kinsmen, they have also had to become fishers, hunters, and reindeer keepers. A few words in their language serve to illustrate the difference that exists between their old and modern usages.

However, the present Yakuts are not a pure race, and since their first migrations from the shores of Lake Baikal they have become largely intermingled with the other peoples whom they met in their new homes. They have crossed especially with the Tunguses, who in many places frequent the same hunting grounds and with whom they have constant trading relations. Custom, and even religious prescription, oblige them to choose their wives outside the family, and in certain cases even outside the clan. These exogamous habits have thus changed many Yakut families to genuine Mongolians, while in the Aldan highlands south-east of

Yakutsk they have become Tunguses in features and aspect. Elsewhere they have been Russified, though the reverse process is of most frequent occurrence, the Russians who marry Yakut wives gradually becoming assimilated to that race. In many camping grounds hunters are met of Slav origin, but of Yakut appearance and habits. In this case the Tatar prevails over the Russian culture.

According to Middendorff the full-blood Yakut has an oval face, with straight nose, slightly prominent cheek bones, on the whole resembling a Kirghiz much more than a Mongolian. In height he holds a middle position between the Russian and Tungus,* and his costume scarcely differs from that of his northern neighbours, except for a kind of high head-dress like the kalpak of the Kirghiz and Khivans. This shaggy covering is evidently modelled on that worn by his ancestors before separating from their southern kinsmen.

The Yakut language, which has been studied by Böhtlingk, Vambéry, and others, also bears evidence to the relationship of this nation with the different peoples of Tûrki or Tatar stock. The Frisian of North Hanover and the Transylvanian Saxon would have greater difficulty in understanding each other than would the Yakut of the Lena and the Osmanli of Anatolia or Constantinople. Doubtless the Tatars and Yakuts might have some trouble in holding converse together, but a slight knowledge of the respective grammars would make intercourse easy enough. The Yakut geographical terminology differs somewhat from that of the Turkestan people, but the family relationship is unmistakable, and in many cases the nomenclature is much alike from the Bosporus to the Lena delta. Yakutish is extremely rich in terms denoting the various forms of mountains, forests, watercourses, and all the features of the earth's surface. The great number of almost synonymous expressions is even one of the chief difficulties which the Russian finds in learning this language. Nevertheless many Russians and Tunguses employ Yakutish more commonly than their mother tongue, and even in Yakutsk, capital of the Russian rule in the Lena basin, the native speech was twenty years ago the language of conversation in the salons of many Russian officials. It has no doubt adopted many Slav terms connected with the bureaucracy and modern technical arts, but Russian has borrowed even more freely from Yakutish. Thus in speech as well as in other respects the Yakuts have prevailed over the Slavs, and cases are mentioned even of the families of Russian priests who have become Tatarized in language and usages, retaining nothing of their nationality except their Slav names and religious practices.

The Yakuts have been called the "Jews of Siberia." They have a genius for trade, and the Tungus, through his improvidence, has become their prey. The Yakut is the real owner of the Tungus reindeers, and claims in advance the martens trapped by the Tungus hunter. But the speculative spirit of the Yakut gets the better not only of the natives, but even of the Cossacks, and several local proverbs throw ridicule on the absurd attempts of the Russian to drive a bargain with the

* Mean height of the Russians at Yakutsk	. . . .	5·9 inches.
" Yakuts "	. . . .	5·7 "
" Tunguses "	. . . .	5·4 "

Yakut. "Let him be ever so knowing, he is cheated at last," says Uvarovskiy. Full of confidence in his genius, the Yakut finds no rival in the art of trickery until he meets the Chinese Daûrians of Transbaikalia. The latter are fully his equals in caution, cunning, knowledge of mankind, feigned simplicity, skill in touching the secret springs of vanity, while surpassing him in temperance, love of order, and thrift. In fact, the Yakut, satisfied with the triumph of the moment, is heedless of the future, repeating the local saying, "Eat well and grow fat; you can do no better!" While compelled to work he will apply himself with the same diligence as the Jew or Chinese, enduring hunger and toil with the resignation of a Tungus, frightened by no danger, disheartened by no difficulty. But when the time comes to unbend he lapses into lazy ways with a sottish indifference, indulging especially in reckless gambling, and risking the fruits of the year, and even of his life, on the hazard of the die. Ruined by an unlucky throw, he again becomes the skilful hunter or shrewd dealer, and resumes his wandering life of toil and hardship.

In spite of his shortcomings, the Yakut is the most progressive of all the inhabitants of Siberia, thanks mainly to his remarkable powers of assimilation. He adapts himself readily to the surrounding physical conditions and populations. During the long Arctic nights he sleeps away the time like the white bear buried in the snows; but as long as the summer sun shines above the horizon he toils incessantly. He makes himself as comfortable in the Samoyede tent as in the Russian hut formed of logs piled one above the other in successive horizontal rows. Sedentary or nomad according to the exigencies of the situation, he is always ready to turn to whatever work is required of him. With the Samoyede or Tungus he becomes a Samoyede or Tungus, while still preserving in this evolution a natural genius in virtue of which he takes the foremost place amongst his new associates. With the Russian he also becomes a Russian, and accommodates himself to bureaucratic routine and practices with astonishing facility. In the struggle for existence this race has not hitherto run any danger of disappearing before the Slav. In many villages the Yakuts are the most prosperous, and owners of the best-kept houses, the young Russians gladly coming to them in search of wives. Although thousands have become Russified, yet their numbers have more than doubled, if not increased fourfold, since the beginning of the century. At that time they are said to have numbered only 50,000, whereas all recent statistics estimate them at over 200,000. Outside the towns they have preserved their administrative independence, still living under their *toyon*, or princes, who are supported by "voluntary contributions."

Under the rude climate of North Siberia the Yakuts cannot everywhere occupy themselves with agricultural pursuits, but as stock-breeders they have succeeded in doing what the Russians have not hitherto attempted. They have contrived to keep their cattle and horses alive in their dwellings beyond the Polar Circle, and do not fear to go in search of fodder hundreds of miles off. They have even succeeded in developing a special breed of "milch mares," which yield as much milk as the cows, and may be milked several times a day. The small breed of horses they sell to the gold-washers are highly esteemed for their strength and powers of

endurance. The Yakuts are flesh-eaters, preferring horse to beef, but are very sparing of their animals, never killing them except on state occasions. As craftsmen they are almost unrivalled, and succeed well in all trades. Their manual skill enables them with the most primitive implements to make all kinds of utensils, and even gold and silver plated wares and jewellery. They smelt the iron ores, and with the metal manufacture better instruments than those of the Russian dealers. In Yakutsk all the artisans, carpenters, joiners, painters, even carvers, are Yakuts. They make samovars and rifles, and can imitate anything, but with an original faculty. One of the curiosities of their industry is a species of basket made of osiers, with all the meshes filled in with clay, and then dipped in cold water to give it a transparent coating of ice. For more than half the year this basket has thus the appearance of a crystal vase.

Most of the Yakuts, baptized at least in form, have Russian, Polish, or German names, though so disguised as to be unrecognisable. The formerly prevalent female infanticide has disappeared, though the old shamanistic rites have not yet been quite abandoned. The Yakuts still believe in witchcraft, invoke the good and conjure the evil spirits. Great changes have doubtless taken place in their habits since the time of Gmelin's visit in the first half of the eighteenth century, but their religion has remained substantially the same. The mountain passes are the scene of the most imposing ceremonies, and here the shaman speaks most earnestly to the air and water gods, to the "little ancestral stream, the ancient of ages," to the "mountain grandmother," to the "dwarfs sought on the right in the eight valleys, and who are suddenly found on the left in the nine mountains." Then he appeals to the wicked genius: "And thou, Shandai, old as the rocks, do not let us be laggards, strike not our youth, do not wink at us, do not turn thy looks against us, and hold thy tongue!" Then the shaman throws spoonfuls of melted butter in the air in thanksgiving to the gods and to appease the demons, and he ties horsehair round the trunks of the trees or to stakes set up on the cliffs. To all their gods the Yakuts have given Russian names, especially that of St. Nicholas, and to their demons those of the Russian devils, and thus their pantheon and pandemonium have become enriched. They also speak of a one God, universal father of all, but he is too high and too far off to be worshipped by them. He it was who made the earth, at first small and level, then the evil spirit came and scratched the surface, tearing it up like a dog, and thus were formed the hills and valleys. The earth constantly growing in size, the valleys became the beds of rivers and seas, and "the continents rose amid the waters."

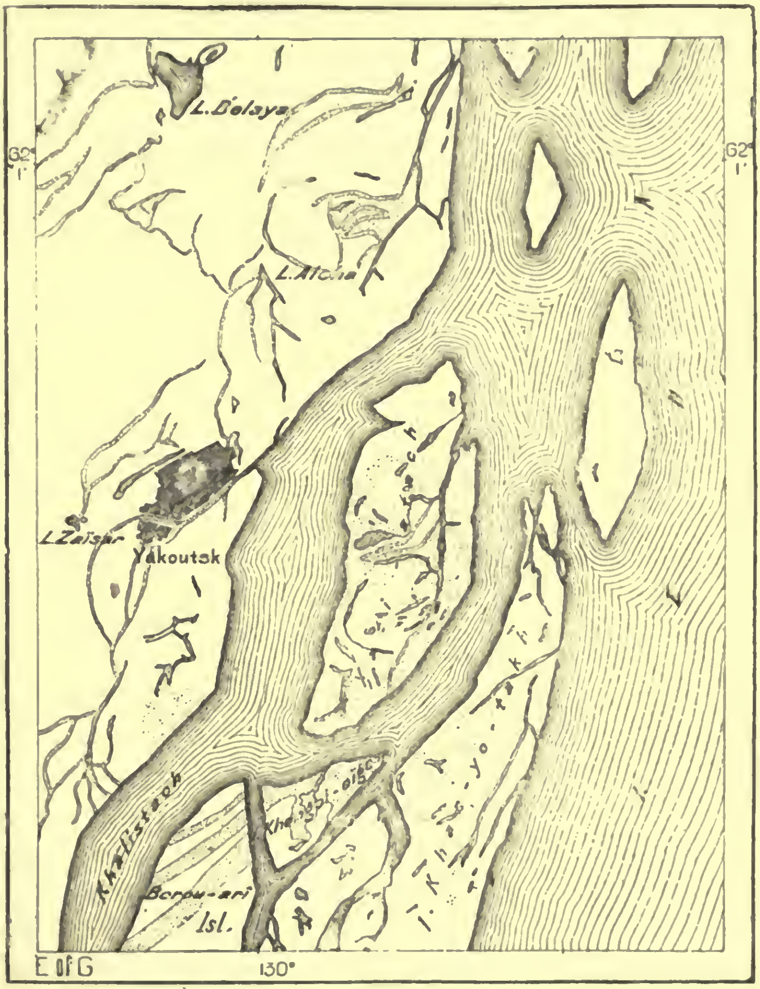
The *Dolgans*, a few hundred of whom dwell in the forests and northern tundras between the Pyasina and Khatanga Rivers, are frequently classed with the Tunguses. Yet their type and dialect show that they are Yakuts, like those of the Lena basin, though diversely intermingled with Tunguses, Samoyedes, and Russians. Owing to the intervening distance they have long ceased to hold any intercourse with the other Yakuts, from whom small-pox and typhus seem to have formerly separated them.

With the Yakuts Gmelin classes the *Yukaghirs*, whose tents are grouped in a

few hamlets in the tundras watered by the rivers Yana, Indigirka, and Kolima; but Billings and Middendorff affiliate them to the Tunguses, while Schiefner regards them as constituting a distinct stock in the midst of the Siberian populations. Their speech is radically different from all other native idioms, but they are obviously a very mixed race, and even now readily intermingle with their Siberian

Fig. 205.—Yakutsk.

According to Middendorff. Scale 1 : 150,000.



3 Miles.

and Russian neighbours. Formerly numerous "as the stars of a clear night," they are certainly disappearing, and soon nothing will be left of them except their barrows and the ruins of their log forts. Venyukov estimates them at about 1,600, other authorities at still less, and the old language is said now to be spoken by no more than a dozen Yukaghirs. The *Chuvantzes*, another neighbouring nation, also very powerful, were reduced in 1860 to 267 souls.

Topography.

The scanty population of the Lena basin and northern tundras is almost everywhere scattered in villages and hamlets at great distances from each other. With the exception of Yakutsk, none of these places bearing the name of towns would be regarded even as villages in more thickly peopled countries. Yet they often occupy a considerable space, owing to their broad streets, large squares, courts, and gardens. But except on feast and market days they are silent and lifeless, and almost disappear altogether, or become blended in the surrounding scenery, when ground, plants, and houses are alike buried in snow.

Verkho-Lensk, whose name indicates its position on the Upper Lena, is one of those administrative villages which have taken the name of town. Inhabited by a few hundred Russians, and surrounded by Buriat and Tungus encampments, it is important only as the first trading station between Irkutsk and Yakutsk, at the head of the navigation of the Lena. *Kirensk*, at the confluence of the Kirenga and Lena, also enjoys some commercial advantage from its position near the portage connecting the Lena with the Nijnyaya Tunguska basin. *Olokminsk*, which in the moraine deposits of the district possesses the richest auriferous fields in all Siberia, is even a smaller place than the two preceding "towns." Yet it stands at the issue of the long valley of the Olokma, which leads by the shortest route from Yakutsk to the northern bend of the Amur. The distance from this group of eighty huts to Yakutsk, the nearest town, is 374 miles, and throughout this long waterway there are nothing but fishing hamlets and inns frequented by the boatmen.

Yakutsk, the "city of the Yakuts," well situated near the left bank of the Lena, at the point where it approaches nearest to the Pacific Ocean, and not far from the Aldan and Vilûi junctions, has grown into a real town, especially if account be taken of the hard struggle man has here to make with the climate. Doubtless the two more populous towns of Archangel and Trondhjem lie nearer to the pole, but the cold is far less intense, nor is the ground constantly frozen in their districts. With the exception of Verkho-Yansk, Yakutsk is the coldest town in the world,* with a mean temperature about the same as on the top of Mont Blanc. Yet 5,000 people are permanently settled here, and thousands of hunters and traders are temporarily attracted to the place by its fair, at which exchanges in peltries and provisions are effected to the yearly value of over 1,000,000 roubles. Many of the residents, however, such as soldiers, officials, and exiles, remain here against their

* Up to the present time Yakutsk, in North-east Siberia, has been cited as the place of our earth where the winter is coldest, while the minima observed during Arctic expeditions are believed to be the lowest known. Neither the one nor the other is true. In Maak's book, "Olekminski Okrug," I find many data which prove that the coldest winter as well as the lowest well-authenticated minima were observed at Verkho-Yansk, to the north-east of Yakutsk. I give below the minima and mean at some places cited by Maak:—

	Minima (Fahr.).	Mean.
Serdze-Kamen (Nordenskjöld)	−50·3	?
Yakutsk (Maak)	−77·3	12·2
Wiljuisk (Maak)	−76·3	?
Werkhojansk (Maak)	−81·0	4·3

A. Woeikof in *Nature*, March 10th, 1881, p. 437.

will. During the reign of Nicholas this was one of the chief places of banishment for political offenders, but since then religious criminals have been mostly interned here.

Vilûisk, the chief place in the great valley of the Vilûi, to which the famous political economist Chernîchevsky was banished; *Verkho-Yansk*, on the Yana; *Sredne-Kolimsk*, on the Kolîma; and *Nijne-Kolimsk*, founded in 1644, on the same river, are also officially classed as towns. But *Bulun*, port of the Lower Lena, has not yet been promoted to this rank, while the Government has deprived of the title *Jigansk*, on the Lena, midway between Yakutsk and Bulun.

VI.—BERING PENINSULA, BASIN OF THE ANADIR, AND KAMCHATKA.

North-east Siberia and the Kamchatka peninsula lie in some respects beyond the Asiatic mainland. These lands are turned towards America, and some of their inlets are even better known to, and more frequented by, American than by Russian craft. Various points of the coast about Bering Strait bear English names, given to them by the New England and Californian whalers. Some of the local tribes seem also to be connected rather with the American than the Asiatic aborigines. Notwithstanding its political subjection to Russia, this region has remained more foreign to the Slav world than any other part of Siberia.

The crest of the continental "backbone" is connected only by irregular ridges and ill-defined plateaux with the highlands of the Chukchi and Kamchadale territories. The range which best presents the aspect of a regular chain runs east and west to the south of the Polar Circle, separating the northern affluents of the Anadir from the Arctic Ocean, and apparently rising in some places to an altitude of 5,000 feet. The hilly plateau comprised between the two border ranges of Stanovoi and Verkho-Yansk may, in a general way, be said to terminate west of the Anadir basin in a sort of elongated ridge with a mean elevation of 2,000 feet, and with peaks about 3,000 feet high. This is the extreme link in the continental orographic system, beyond which the heights begin to assume an isolated character. The fiords indenting the eastern portion of Bering peninsula may be regarded as the remains of straits formerly separating the islands from the mainland. Thus the Bering peninsula, properly so called, is divided into two secondary peninsulas, rooted to the continent at a point only 60 miles broad. But the relief of the whole of this peninsular region is extremely irregular. The Serdze-Kamen, the last headland on the coast facing northwards, is over 1,000 feet high, while East Cape, at the northern entrance of Bering Strait, rises to an elevation of 2,350 feet. The Chukotskoi Nos, projecting into the Pacific over against St. Lawrence Island, has an altitude of 2,760 feet, and other headlands are still higher, culminating with Mount Makachinga, 8,900 feet, at the northern extremity of Etelkuyum Bay, north side of the Gulf of Anadir. This is the loftiest eminence in the Old or New World under the Polar Circle.

The mountains connecting the Kamchatka peninsula with the mainland also form a distinct orographic system. Their general direction seems to run parallel with the last spurs of the Stanovoi; that is to say, south-west and north-east. Thus the range beginning on the west coast in the broadest part of the peninsula skirts the coast of the Bering Sea as far as the entrance of the Gulf of Anadir. Still this range should be regarded mainly as the border chain of a hilly plateau forming a

Fig. 206.—Volcanoes at Cape Povorotnoii, South of Avacha Bay.
According to the English Admiralty Chart. Scale 1 : 575,000.

6 Miles.

western continuation of that of the Upper Anadir, and in many places presenting the aspect of a veritable steppe. Here are the summer pasture lands of the numerous reindeer herds belonging to the Koriaks. In the Kamchatka peninsula itself the western highlands commanding the Sea of Okhotsk are more elevated than those of the east side washed by the Pacific Ocean. But these granite, porphyry, and palæozoic schistose crests, forming the ancient backbone of the peninsula, have been joined by more recent volcanic formations, trachytes, basalts,

lavas, and scoriæ, rising to a far greater elevation than the other mountains. These modern cones have indented the east coast with capes and inlets by the lava streams they have discharged into the sea. Hence, while the coast-line of the peninsula facing westwards is remarkably uniform, the opposite side is varied with numerous bays and creeks. One of these inlets near the southern extremity of Kamchatka, the famous Bay of Avacha, ranks with those of Rio de Janeiro and San Francisco as one of the "best harbours in the world."

The Kamchatka volcanoes form a northern continuation of the curved chain of the Kurile Archipelago, whose convex side, like the similarly disposed chains of the Philippines, Liu-Khieu, Japan, and the Aleutian group, is turned towards the Pacific Ocean. Towards the middle of the east coast of Kamchatka two arcs of a circle converge at a point where are situated the highest and most active volcanoes of the peninsula. Nearly forty mountains in Kamchatka are of volcanic origin, as is evident from their conic form, the craters on their crests or flanks, the lava streams that have been discharged from their crevasses. But of these not more than twelve still vomit scoriæ, ashes, and vapours.* They culminate with Mount Klyûchevskoi, which rises near the sea, immediately south of the large valley traversed by the river Kamchatka. Several rows of terraces and secondary summits cluster round its base, which is no less than 200 miles in circumference. The crest, which is fissured in every direction, constantly emits smoke and ashes, sometimes as often as two or three times a year, and dense volumes of dust have occasionally been wafted 180 miles over the land. An eruption mentioned by Krasheninnikov lasted four years, from 1727 to 1731, and that of 1737, which was far more violent, discharged vast lava streams, melting the glaciers and sweeping avalanches of ice and water into the surrounding valleys. Another disturbance took place in 1854; but these events, however grand in themselves, being witnessed only by a few natives or Russian officials, awaken but little attention in the West.

Kamchatka and the neighbouring seas are often agitated by violent earthquakes. In 1737 a shock is said to have raised the waves to a height of 200 (?) feet, flooding the coast, sweeping away the tents of the natives, and laying bare the bed of the sea. The northern part of the peninsula, lying beyond the focus formed by the junction of the curve of the Kuriles with that of the Aleutian Islands, seems to have suffered much less than the southern districts from these convulsions. But there are numerous hot springs, both here and in the Bering peninsula, where they form little rivulets in the centre of the isthmus.

The Anadir is the only river of North-east Siberia comparable in the extent of its drainage and the length of its course with the larger streams of West Europe. But flowing partly under the Polar Circle near the verge of forest vegetation, the

* Elevation of the Kamchatka volcanoes:—

	Feet.		Feet.
Klyûchevskoi (active)	15,610	Krestov (extinct)	8,770
Koryakorskiy „	11,120	Jupanov (active)	8,410
Ushkin (extinct)	10,890	Avacha „	8,210
Shevelynch (active)	10,445	Great Tolbacha (active)	7,730
Kronotz (extinct)	9,860	Viluchinskiy „	6,690

land traversed by it is mainly a solitude. The small fort of Anadirsk, erected at the beginning of the eighteenth century as a depôt for the peltry trade, had to be abandoned by its Russian garrison, after which it was burnt by the Chukchis. It is now replaced by four small villages, with a total population of about 200 souls, Chuvantzes, Yukaghirs, and Cossacks, all speaking Russian, but all living in a half-savage state. Like most other rivers in the Chukchi and Kamchadale territories, the Anadir abounds in fish at the time of high water to such an extent that it seems one living mass. When the shoals of salmon ascend the streams, they drive the water before them like a moving wall, and they are packed so closely together that they may be taken by the hand. At times the water even ceases to be potable, owing to the intolerable stench and taste imparted to it from millions of animals in decomposition.

The river Kamchatka, which gives its name to the peninsula, is less than half the length of the Anadir. But flowing much farther south through naturally fertile plains, still more enriched by volcanic débris, it waters some cultivated tracts, and nearly twenty Kamchadale and Russian villages have sprung up along its banks. This is the true *Bolchaya Ryeka*, or "Great River" of Kamchatka, although this title has been given by the Russian settlers to another stream, which flows west to the Sea of Okhotsk, near the extremity of the peninsula.

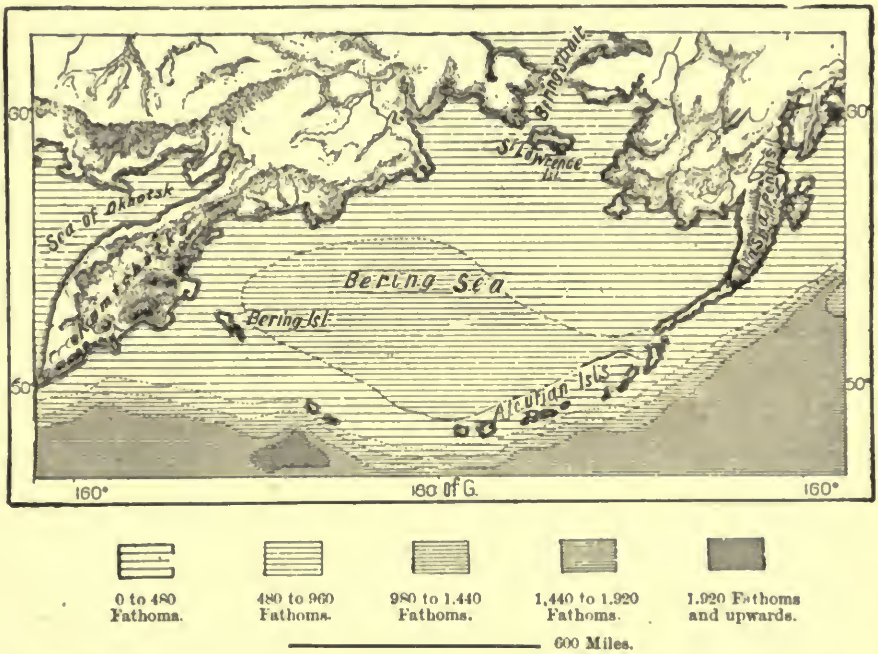
Bering Strait and Sea.

The seas which bathe the shores of the north-eastern peninsulas of Siberia are not deep. If the coast is here broken into fragments by fiords, struggling, so to say, to become straits, the bed of the sea is, on the other hand, so near the surface that it may be regarded as almost forming part of the mainland. The shallows skirting the northern seaboard of Siberia, from the Taimir headlands to Wrangell Land, are continued to the extremity of Bering peninsula, and beyond the strait along the coast of North America. The Chukchis themselves are quite aware that the two continents are connected by submarine banks, even asserting that they were formerly joined by an isthmus. Two native hunters related to Neumann how the land subsided during a terrific fight between a warrior and a white bear. The greatest depth reached by the plummet between the two extreme peninsulas of the Old and New World is less than 32 fathoms, while the mean result of the soundings in all the Asiatic and American waters comprised between the strait, St. Lawrence Island, and the Yukon delta falls short of 22 fathoms. The true ocean, with its profound abysses, begins, on the one hand, north of Wrangell Land; on the other, off the Kamchatka coast, between the peninsula and the Aleutian Islands, where a depression occurs of over 270 fathoms. Still farther south, off the Japanese coast, the sounding-line plunges into the greatest ascertained depth on the surface of the globe. Here it registers 27,860 fathoms, whereas in the almost land-locked basin of the Sea of Okhotsk it nowhere shows more than 350 fathoms.

Although a mere scratch on the earth's surface, Bering Strait has acquired a paramount interest in the history of discovery. Yet the first voyage of Dyejnyev

long remained forgotten, and eighty years passed before new attempts were made in this direction under the advice of Leibnitz. Bering now coasted the peninsula named from him, from the Gulf of Anadir to the Serdtze-Kamen, and in 1741 again visited these waters for the purpose of exploring the American seaboard. But on his return he was shipwrecked, and perished on the largest island of the group from him named the Commander's Archipelago. His grave may still be seen on Bering Island, a long ridge of high lava rocks, evidently forming the western buttress of the curved bridge of the Aleutian chain, thrown by the Alaska volcanoes across the water to the great burning mountain of Klyûchevskoi, in Kamchatka. Cook also navigated the Bering Sea, and surveyed all the northern entrance of the strait, but without penetrating to Wrangell Land. These waters were soon after visited by

Fig. 207.—Bering Sea.
Scale 1 : 30,000,000.



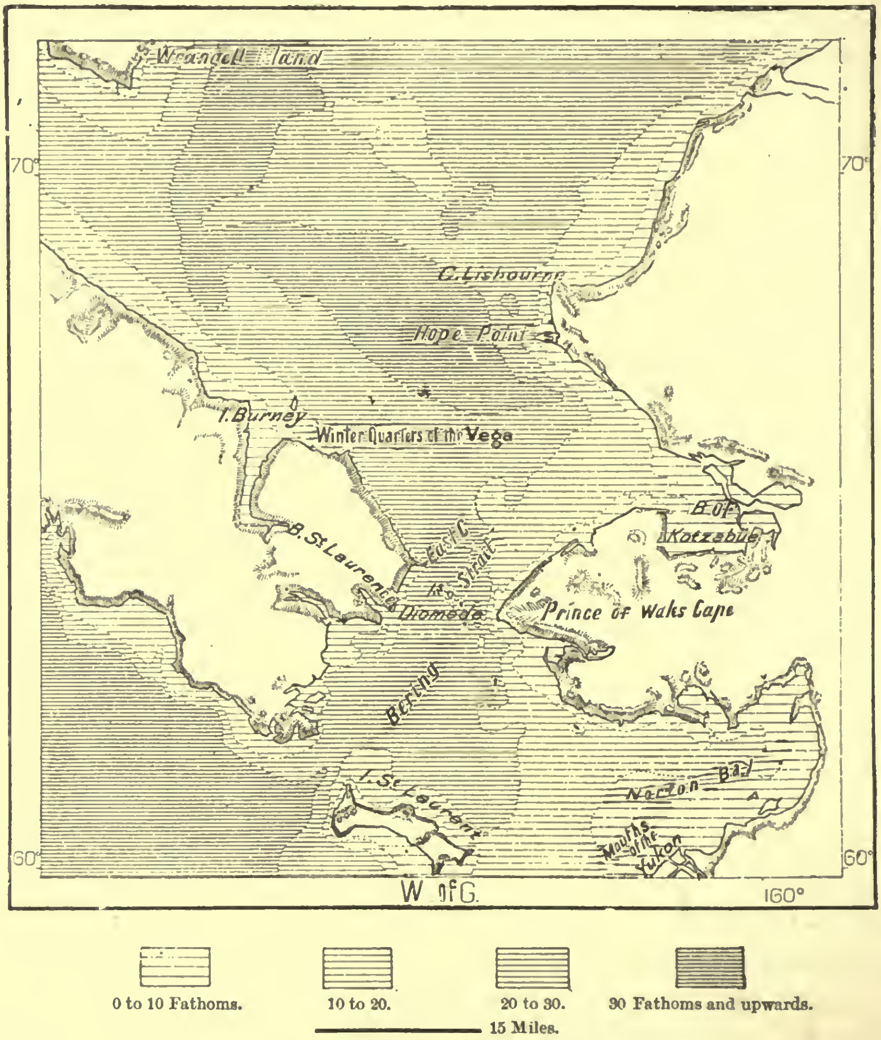
Lütke, Kotzebue, and other illustrious explorers, and later on as many as four hundred whalers have assembled in these seas. Lastly, MacClure, after traversing Bering Strait, completed in 1850 the circumnavigation of America, and in 1879 Nordenskjöld doubled East Cape, thus showing that by the aid of steam the long-sought-for "North-East Passage" is practicable.

Forming the central gap in the vast semicircle stretching for a distance of 24,000 miles, from the Cape of Good Hope to Cape Horn, Bering Strait is naturally one of the most important oceanic regions in regulating the winds and currents. The winds arrested on the Asiatic and American continents by plateaux and mountain ranges find a free passage through the strait. The masses of hot air resting on the Pacific, and the cold atmospheric currents from the pole, here move in opposite directions, contending for the upper hand. Opposite currents are produced, which, owing

to their different density, become regularly superimposed, like the draughts felt on opening the doors between two rooms of different temperature. During the winter of 1879, passed by him near the northern entrance of Bering Strait, Nordenskjöld ascertained that a glacial wind from the north-west set steadily along the surface of the water from the Frozen Ocean to the Pacific, while

Fig. 208.—Bering Strait.

According to Bove. Scale 1 : 1,200,000.

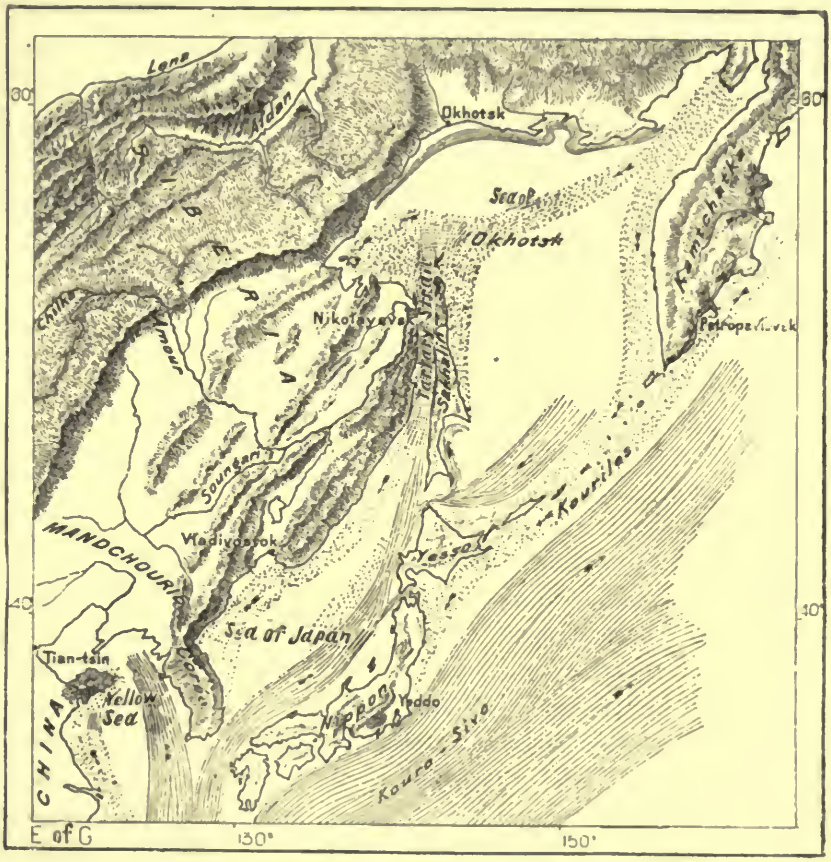


higher up the clouds drifting incessantly northwards proved the existence of an opposite atmospheric current. In the same way two oceanic streams here meet, though they are unable freely to develop in the confined and shallow space separating the two continents. The mass of tropical waters flowing from the South Seas to the North Pacific sets steadily from the Japanese waters towards Bering Sea, through the numerous openings between the Aleutian Islands. But

being arrested by the submarine banks connecting Asia and America, this stream is almost entirely again deflected southwards along the North American seaboard. The cold waters from the Frozen Ocean are also collected at the northern entrance of the strait, where, in consequence of the rotation of the globe, they deviate towards the right, following mainly the Asiatic coast above the trough of deeper waters passing between Bering peninsula and St. Lawrence Island. In another direction

Fig. 209.—Currents of the Bering Waters.

Scale 1 : 3,300,000.



Black Flow from north to south. Stream flowing northwards.

600 Miles.

some of the tepid water impelled towards the Aleutian Archipelago by the Kuro-sivo, or "Black Stream" of the Japanese, flows northwards through the strait. Thus Onatzevich detected a small current of relatively warm water running from East Cape to the Serdtze-Kamen. Hence, during the short summer which breaks up the crust between the two worlds, long lines of floating ice are seen drifting southwards along the Asiatic coast, whilst smaller masses are carried in the opposite direction northwards to the American side. None of these floes, however, deserve

the name of icebergs. The portion below the surface being on an average seven times thicker than the portion above it, masses rising more than 16 feet above sea-level are necessarily arrested by the submarine banks before reaching the strait. In the nearly land-locked basins of the Seas of Okhotsk and Japan the waters flow in a similar manner, every current from the south having its counter-current from the north.

Climate—Fauna and Flora.

The difference in the climate is reflected in the appearance of the vegetation on both sides of the strait. While the American coast is wooded to a considerable distance north of Prince of Wales Cape, nothing grows on the Asiatic coast except mosses and lichens, and in the sheltered nooks a few stunted shrubs. Seen from a distance, this coast seems quite bare. Here the treeless zone comprises all the Bering peninsula, the shores of the Gulf of Anadir, and the land as far south as the neck of the Kamchatka peninsula. But this peninsula itself, although lying almost entirely beyond the isothermal of freezing point, is very wooded, and even supplies timber for the navy. Its flora includes most of the Siberian trees, larch, various species of conifers, birch, sorb, poplar, and willow. In the underwood are several species of berries contributing to the sustenance of the inhabitants, who also dig for roots and tubers, from some of which they prepare intoxicating drinks. A peculiar article of diet is the green bark of the birch mixed with caviar. In some of the fertile valleys, especially in Kamchatka, the hay often grows 5 or 6 feet high, and is sometimes mown three times a year by the Russian settlers. But the repeated attempts to grow cereals have mostly failed. Although the climate is equable enough, thanks to the surrounding seas, the fogs and hoar frosts coinciding with the flowering time have nearly always killed the plants. Oats succeed best, and some hemp is also cultivated, though not in sufficient quantities to dispense with the thistle used in the preparation of the Kamchadale nets. Gardening has succeeded better than the raising of crops, and the cabbage, potato, beet, turnip, carrot, and other vegetables introduced from Russia in the eighteenth century are now cultivated in thousands of native gardens. Yet all these sources supply but a small portion of the food required by the Kamchadales and their dogs, without which they could scarcely leave their huts in winter. During the four summer months they have to lay up their stock of dried fish for the rest of the year. Fish is the regular winter food of the dogs, six of which, forming the usual team of a sleigh, will consume over one hundred thousand herrings in the cold season. The family has also to be provided for, and in hard times, when the chase and fishing fail to supply sufficient store for winter, many perish inevitably. Winter and want are synonymous terms for most of the natives.

The fauna of North-east Siberia is richer than that of the Arctic regions farther west. This is probably due to the form of the continent, which, by contracting towards Bering Strait, brings the animals migrating from the west in contact with those coming from the south. To these have been added some American species, such as birds and quadrupeds crossing the strait on the ice. The most numerous

mammal is the Alpine hare, which will even approach the tents notwithstanding the half-famished dogs prowling about. The bear, marmot, weasel, and otter are also common, and the wild reindeer roams in herds of thousands in the hilly regions of the Upper Anadir basin. Snakes, frogs, and toads are nowhere met, but the fauna includes the lizard, which was formerly regarded as an animal of ill omen, and as the spy of the evil spirits. When seen they were always set upon and cut to pieces to prevent them from reporting on whom their evil eye had fallen.

Thanks to the relative advantages of its climate, Kamchatka naturally abounds far more in animal species than the Bering peninsula and the Anadir basin. The lemmings (*Myodes torquatus*) and other small rodents swarm in countless millions, their hosts crossing rivers, lakes, and even inlets of the sea in straight lines, and are decimated on the route by shoals of voracious fish. At certain points travellers have been arrested for hours while these vast armies were marching past. Their migrations last several months, covering distances of over 600 miles. Thus the Kamchatka lemmings set out in spring, and after skirting the Gulf of Penjina, north of the Sea of Okhotsk, reach their summer camping grounds on the west coast about the middle of July, and generally get back to Kamchatka in October. However, the migrations are not regular, and, according to Bove, the lemmings of the Chukchi coast are sedentary and non-gregarious. The Kamchadales are greatly rejoiced when the animals make no preparations for quitting their winter quarters at the usual time, anticipating from this symptom a good season and abundance of everything. The industrious and provident lemmings store up their supplies of corn and roots in large underground depôts, which they are said to cover with poisonous herbs when setting out, in order to protect them from the depredations of other species of rodents. Such, at least, is the statement of Krasheninnikov, who, however, does not vouch for its truth. In hard times the Kamchadales draw from these storehouses, but never fail to replace what they have taken with caviar or fish, in order not to drive these beneficent purveyors to despair.

Many animal species have been reduced in numbers since the Russian hunters have begun the systematic work of extermination in these regions. The bearers of valuable furs, sables, ermines, gluttons, foxes, are now seldom met, and many hunting stations have been abandoned since the disappearance of the game. But in Kamchatka from 6,000 to 9,000 sables are yearly taken and exported to Russia by American traders settled at Petropavlosk and on the Okhotsk coast. The various species of foxes were so plentiful in the eighteenth century that though driven from the Kamchadale tents with blows of sticks, they would still return to share the meal with the dogs. But now they have become very scarce, and the costly blue species is said to have been replaced by one bearing a white fur of little value.

The work of extermination has been even more thorough in the seas, from which some species have disappeared altogether. Till the middle of the present century the whales were met in most abundance in the Bering waters, which were visited by hundreds of American whalers, especially from New Bedford and other New England ports. But these waters, like those of Spitzbergen and other parts of the Atlantic, are now frequented only by a few stray specimens, and none at all are said to be

found west of Serdtze-Kamen. The sea-otters, whose fur is very valuable, are no longer met on the shores of Bering Island, where Steller and his associates killed 700 of these animals during the eight months of their residence there. The sea-lion (*Otaria Stelleri*), formidable in appearance, but really a timid creature, is only met here and there on a few isolated spots, though formerly abounding in these waters. The great sea-cow also, which bore a striking resemblance to the lamentin of the Caribbean Sea, and which was so called by certain naturalists, has been completely exterminated. Seen for the first time by Steller in 1741, the last specimens are supposed to have been killed about 1780. In the middle of the eighteenth century this huge monster, 28 to 30 feet long and weighing over 3 tons, was abundant enough to supply food for all the inhabitants of Kamchatka; but its range was limited by the Commander's Archipelago, where the bed of the sea was covered with forests of algæ growing 80 to 100 feet high, and forming their chief grazing grounds. Being thus confined to a restricted area, the whole species was destroyed in less than half a century.

The sea-bear (*Otaria ursina*) was also threatened with speedy extinction, when an American Company owning the Pribilov Islands obtained from the Russian Government the exclusive right to hunt this animal in the Bering waters for a tax of two roubles for each capture. A village of 300 Aleutians from Atcha Island has been built by the company on the north-west side of Bering Island, which was uninhabited till then. Reared in herds almost like domestic animals, and protected from indiscriminate slaughter, the sea-bears have multiplied prodigiously during the last twenty years, and whereas formerly the hunt never yielded more than 3,200 in the whole of the Aleutian and Commander's Archipelagos, from 12,000 to 13,000 are now annually killed in Bering Island alone. These animals have the sense of property developed to a remarkable degree. Each head of a family, consisting of from 100 to 150 members, selects some camping ground on the rocks, and immediately attacks the first stranger who attempts to encroach in his domain. Spectators assemble from all quarters, and generally end by taking part in the fight, which thus often rages over spaces several hundred yards in extent. The male is very tender and watchful, but also very irritable, and should a female let her little one fall, he bangs her against the rocks and knocks her about unmercifully. But the quarrel is soon over, and followed by much mutual weeping.

INHABITANTS—THE CHUKCHIS.

Being almost exclusively fishers, hunters, or pastors, all the inhabitants of the Bering peninsula, of Kamchatka and neighbouring islands, regulate their pursuit entirely according to the climatic conditions, almost everywhere changing their dress, diet, dwellings, and camping grounds with the seasons. The Chukchis, or Chaûktus—that is to say, "Men" *—who are the most numerous nation in north-east Siberia, follow their reindeer herds over the whole of the Bering peninsula, the

* But Hooper ("Ten Months among the Tents of the Tuski") says that their real name is *Tuski*; that is, "Brothers," or "Confederates.

CHUKCHI TYPES AND COSTUMES.

Anadir basin, and beyond the last spurs of the Stanovoi, in the tundras watered by the rivers Kolima and Indigirka. The limits of their territory south of the Yukaghir country were fixed in 1869 by an imperial decree. But although their domain thus comprises altogether about 320,000 square miles, it contains a population of not more than 12,000. Bove, of the Nordenskjöld expedition, estimates the Chukchis themselves at from 3,000 to 5,000 only; but he made no extensive incursions into the interior, and was acquainted with the coast tribes alone. He traces them originally to the Amur basin, while Neumann brings them from the northern parts of the New World.

The Chukchi type is that of the round-headed Mongolian, with broad, flat features and high cheek bones. The nose is often so deeply embedded between the puffed cheeks that a ruler might be placed across the face without touching it. The lips are thick, and the black hair falling over a low brow renders it still lower in appearance. The Chukchis have a strong neck, vigorous muscles, fine and delicate extremities, and are mostly of low size, though some of tall stature are met. They have, on the whole, a decided physical resemblance to the American Eskimo, and by means of these two nations the transition is imperceptibly effected between the aborigines of the Old and New World. From the Red Skins to the Yakuts and Buriats, constant interminglings have produced all the intermediate links, bringing the relationship closer and closer, although the languages still present fundamental differences. Some of the Chukchis perfectly resemble the Dakotah Indians, while the obvious analogy of type between them and the Eskimo, their common usages and implements like those of the stone age in Europe and America, have induced some anthropologists to suppose that these two sub-Arctic peoples are the survivors of a prehistoric race, gradually driven northwards by pressure from the south. Thus their ancestors would have to be sought not in their present domain, but in the southern regions where the vestiges are still found of arts and industries analogous to their own.

However this may be, the present Chukchis do not look like a people in decay, but hold their own well amongst the other natives of the Siberian seaboard. Their relations with the Slavs are of too slight a character to make the Russian rule much felt, and many of them are even unaware of the existence of the "White Czar," who is spoken of with such awe and respect by the Mongolians of the Chinese frontier. Owing to their contact with the American whalers they are better acquainted with the United States than with Russia, and many English words have been introduced into their language. They pay the *yassak* in fox or other skins, and understand that this tax passes from hand to hand to the feet of a great potentate enthroned in Irkutsk; but they do not know that this chief is the servant of one more powerful still.

The Chukchi nation is naturally divided into two distinct groups, the inland and the coast people, differing not only in habits and pursuits, but even in speech. Those of the tundras, living on the flesh and milk of their reindeer, are generally more comfortable than the fishing tribes, although even amongst the latter great disparity of fortunes often prevails. According to Bove there are still herds of

from 20,000 to 30,000 belonging to one person, while Krasheninnikov speaks of Koriak chiefs owners of as many as 100,000 reindeer. The reindeer pastors are constantly on the move, migrating across the tundras for hundreds of miles between the rivers Kolîma and Anadir. From these roaming habits they have developed a remarkable talent for tracing charts of the country on the ground. Many travellers speak with admiration of these plans, by the help of which they have often been enabled to traverse the wilderness with perfect confidence. The herdsmen have also the faculty of gaining the attachment of their herds. They generally despise the fishing tribes, who are more sedentary, less brave and careful of their personal appearance, and also much poorer than the reindeer Chukchis, from whom they are obliged to beg for hides to make their tents and garments. The two great divisions may possibly even belong to distinct races, for they differ both in type and speech. The fisher is more exposed to the risk of hunger during winter, and is compelled to be more provident in laying in supplies. He dries the fish, and collects the sprouts of the dwarf willow and of several other plants, which, after being fermented and then frozen, supply him with a winter salad and soup. He also digs for various roots and tubers, and the old women remove from the stomach of the reindeer the still undigested green stuff, which, as with the Eskimo, forms one of their most keenly relished dishes. But the staple of their food is fish. The smell of the seal oil used for heating and lighting purposes contributes to render life amongst them almost intolerable to Europeans.

The Chukchis were formerly a warlike and conquering people. They fought valiantly against the Russians, and when they at last consented to enter into commercial relations with them, they presented their wares on the point of the spear. Even recently the Onkilon nation, dwelling on the coast about Cape North, has been expelled by the Chukchis. Nordenskjöld saw an abandoned village belonging to the vanquished tribe, the survivors from which had fled to the south of Bering Strait, near the Anadir delta, and are known to most Russian writers under the name of Ankali or Namollo. They are distinguished by their agglutinant language from the surrounding Chukchi tribes, who, according to Bove, speak a dialect of Mongolian origin. The Chukchis wore cuirasses of whale-skin or other armour of wood and ivory like that of the Japanese, but have laid all this aside with their warlike habits. At present they are the most peaceful people in the world, devotedly attached to each other, full of kindly feeling and good-humour under all their trials, and extremely gentle in their family relations. They no longer kill off the old people, as formerly required by filial devotion, in order thus to spare them the inevitable struggle with cold and hunger. According to Onatzevich most of the old men now make away with themselves to relieve their children from the pain of having to give the fatal blow. In 1848 Hooper met a young man who had just dispatched his mother at her own request, and whose obedience had been approved by all.

Having become Christians and "civilised" by their intercourse with the American whalers, the Chukchis have given up some of their old rites; but they still burn their dead, or expose them on platforms to be devoured by the ravens.

They also sacrifice animals to the genii of the hills, rivers, and hot springs, and purchase two or more wives when rich enough in reindeer to justify this expensive luxury. Thanks to the women, who set up the tents, dress the food, span the reindeer, the men are able to devote themselves exclusively to fishing, hunting, and trade. But although apparently slaves, the women are the real masters. The children are treated with great kindness, are carried about by father and mother alternately, and never allowed to suffer from cold or hunger. They are so wrapped in skins as to resemble a round ball crossed by a bar, their outstretched arms being unable to hang down the sides of their packing-cases.

The Chukchis seem to have been influenced by the Tunguses more than by any other Siberian people. The costume of both is alike in cut and ornamental details, and many Chukchi women are tattooed in Tungus fashion with two black-blue convex lines running from the eye to the chin, and serving as a stem for a rich floriated design ramifying towards nose and mouth. Amongst others the pattern is reversed, the primary lines from temple to chin following the anterior swelling of the cheek, with circles and other curves branching to the lobe of the ear. Since they have been baptized some of the men have the chin painted with a Latin cross in black, which replaces the tooth of the sea-horse thrust by their forefathers through the cheek, and regarded as the most highly prized ornament by the warriors. A rude representation of fighting or hunting exploits is also tattooed on the breast. The search made by Nordenskjöld and his associates amongst the old kitchen refuse of the Chukchis has led to the discovery of ornaments and utensils of stone, bone, or fish and mammoth teeth. The resemblance between most of these objects and those in use amongst the Greenlanders is complete, the coincidence being too great to be accounted for by the like surroundings. Hence they must be regarded as the result of commercial relations carried on from tribe to tribe from the Bering peninsula through the Eskimo country to Labrador and Greenland. In the same way the Tûrki word for boat or skiff has passed under the form of *kayak*, on the one hand, from the Yakuts to the Chukchis, and so on to the Eskimo and Greenlander; on the other, through the Osmanli Turks, to the elegant *caïque* of the Bosporus, whence it has been transmitted under Spanish influence to the *cayuco* of the American aborigines.

As forming the medium of trade between Siberia and America, the Chukchis seem to have been formerly very powerful on the coasts of Bering Strait. They held the foremost position amongst the Eskimo and other traders, who met for barter especially in one of the Diomede or Gvozdeva group, in the middle of the strait. But the commercial supremacy has now passed to the Americans, who have supplied the Chukchis with iron instruments to replace those of stone or bone, and who have brought them into relation with the industrial world. American implements and fishing gear, revolvers and breech-loaders, have already found their way to the strait, accompanied, unfortunately, by the fatal brandy, for a small glass of which adulterated stuff the Chukchis will eagerly exchange all the produce of the chase and fisheries. But when sober they scarcely yield to their Yakut neighbours in driving a bargain.

Since the above was passed through the press Mr. W. H. Dall, of the United States Coast Survey, has communicated a letter to the *Proceedings of the Royal Geographical Society* for September, 1881, in which he argues against Lieutenant Nordqvist, of the *Vega* expedition, that the Chukchis are simply a branch of the Koriak race. The Chukchi peninsula, he writes, "is inhabited by two races who live in intimate commercial union, but who possess radically different languages, who do not intermarry, and whose modes of life are for the most part perfectly distinct. They communicate with each other, and with the whalers and traders, by means of an ungrammatical jargon composed of words of both languages, and this jargon, being written down by travellers as the real language of the people, has been the main agent in producing the present confusion." The two races in question are the Eskimo and the Koriaks. The Eskimo, settled exclusively on the coast, are comparatively recent arrivals from the opposite shores of America, and call themselves Yūit—that is, "People"—a contracted form of the American Eskimo word Innuit. They occupy a far more extensive strip of territory than is usually supposed. "The supposition that the Innuit race are only found west and south of Cape Chukotski is erroneous. . . . . The East Cape village is essentially an Innuit settlement, though it may contain some Korak (Koriak) residents. I suspect that they extend much farther to the westward on the North Siberian coast, but of this I have only the evidence of intelligent whalers and traders, such as Captains Radfield, Owen, Smith, and Herendeen, who have had ten or fifteen years' experience with them, and who all clearly recognise the racial distinctions."

The rest of the seaboard and all the interior are peopled with "roving bands belonging to different branches of the Korak, or Koriak nation, who are distinguished by different names, as Deer Koraks, Dog Koraks, Chukches, Reindeer Men, Wandering Chukches, &c. THEY ALL SPEAK DIALECTS OF THE KORAK TONGUE, and chiefly depend upon the reindeer for their subsistence. . . . . It being remembered that the Korak people inhabit the whole of the interior, that some of them are almost always present in the Innuit villages on commercial or other business, and accompany the parties of Innuit who board the whalers and traders for barter, that each locality has both a Korak and Innuit name, and that the jargon of both languages is the means of communication, it will be realised how great the difficulty is for a transient visitor to disentangle.

"We learn from Erman that the so-called 'Chukchis' in the west of the peninsula call themselves *Tsau-chu.* At Plover Bay I ascertained that those in that vicinity call themselves *Tsau-yū* (plural, *Tsau-yū-at*). According to Stimpson, those of Semavini Strait call themselves *Tsau-* (or *Tsu*) *tsin*, whence the word Chukche might easily be derived. Those of St. Lawrence Bay call themselves *Tsau-gū;* and on the north coast, according to Nordqvist, they call themselves '*Chau-chau*' (plural *-ate*), which I suspect to be merely a rendering of the term given by Erman." To this it may be added that, according to Hooper,* the true form of the word is *Tuski*, which means "Brothers," or "Confederates."

* "Ten Months among the Tents of the Tuski."

The Koriaks and Kamchadales.

The Chukchi ethnical domain seems to stretch beyond the strait to the American mainland, while, on the other hand, some Eskimo communities are settled on the Asiatic side, at least if the Ankali or Namollos belong, as is generally supposed, to this stock. The Koriaks, who dwell south of the Anadir basin, about the neck of the Kamchatka peninsula, in the Penjina valley, and on the north-west coast of the Sea of Okhotsk, seem to be related to the Chukchis, and speak a dialect closely resembling theirs. Estimated at over 5,000, they are divided, like the Chukchis, into settled fishing tribes and nomad reindeer keepers and hunters. The southern limit of their territory in Kamchatka is the village of Tigil, on the river Syedonka, where they go once a year to barter with the Kamchadales and Russians. Tigil is the commercial centre of the west coast of the peninsula.

Travellers do not speak very highly of the sedentary Koriaks, who live mostly on the northern bays of the Sea of Okhotsk. Descended from ruined nomads deprived of their reindeer herds, their only resource is fishing and trade with foreign sailors and Russian dealers. From the former they have acquired drunken and dissipated habits, from the latter lying and thievish propensities. They are eaten up by vice and squalor, and are probably the most degraded of all Siberian tribes. But the Koriak nomads, still owning numerous reindeer herds, accustomed to a free and independent life, and with the full consciousness of their equality, do not yield to the Tunguses in intelligence, uprightness, natural dignity, and manly bearing. They recognise neither government nor outward laws, the owner of even a dozen reindeer being a master and "law unto himself." The families are generally associated in groups of sixes or sevens, forming small commonwealths, in which all have an equal voice, and join or leave at pleasure. The *Layon*, as the wealthiest member of the community is usually called, is generally consulted by the rest on the choice of a camping ground, or on the best time for breaking up, but he has no personal authority. In other respects the Koriak nomads are the most obliging and hospitable of Siberians, and in their domestic relations the best of husbands and fathers. During two years and a half's residence amongst them Kennan never saw a Koriak nomad beat any of his family. They also treat their animals very gently, and so attached are they to their herds that they will refuse to sell a live reindeer to strangers at any price. Even for their own use they abstain from killing them except under severe pressure, and they are consequently, in a relative sense, the largest owners of reindeer in Siberia.

In their habits the Koriaks naturally show points of contact with the Chukchis and Kamchadales, between whom they live, and with whom they have frequent trading relations. They have also great confidence in their shamans, able conjurers who perform the most surprising tricks in the open air. The Koriaks offer sacrifices to the evil spirits, considering it useless to propitiate the favourable deities. The heads of the victims are stuck on stones facing the rising sun. Like the Kamchadales, they are obliged to earn their wives by working one or more years under the father-in-law's roof. Till the wedding-day, brought about by a feigned

abduction, the betrothed is guarded by vigilant duennas, who drive off the too importunate suitor with thongs, whips, and sticks. The custom still prevails of killing the aged and sickly in order to spare them protracted sufferings. All Koriaks regard this kind of death as the natural end of their existence, and when the time seems at hand they prescribe the manner in which they desire this supreme proof of filial affection to be carried out. Some prefer stoning, while others choose the axe or knife. All young Koriaks practise the art of giving the fatal blow in such a way as to inflict the least pain on the victim. Immediately after death the body is burnt, so that the spirit may escape into the air. At the time of Krasheninnikov's visit infanticide was common, and of twins one was always sacrificed.

A number of the Koriaks have hitherto contrived to completely maintain their independence, and do not even pay the tribute to the Russian officials. No other Siberian people have struggled so manfully to preserve their freedom from the Russians. In their warfare with the Cossacks they always proved the most formidable of adversaries, because they had really "made a bargain with death." When they found themselves surrounded by enemies too numerous and too well armed to be overcome, they took an oath to "lose the sun," slaughtered their women and children to save them from slavery or torture, burnt all they possessed, then rushed into the midst of the carnage. No one thought of flying, all fighting to the last, and falling side by side amidst heaps of the slain.

The Kamchadales, or Itelmen, by the Koriaks called Konchalo, probably owe their Russian name to that of the river Kamchatka, which has also become that of the whole peninsula. They are quite distinct, both from the Chukchis and Koriaks, and evidently belong to another stock, although under like climatic conditions all these peoples have adopted analogous habits. They are generally smaller than the Koriaks, whom they otherwise resemble in their round, broad features, prominent cheek bones, small deep-set eyes, flat nose, black hair, swarthy complexion. Their language, which is very guttural, differs in its syntax from that of the Koriaks, and is composed of unchangeable roots, whose sense is modified by prefixes. But this peculiar idiom is rapidly disappearing, like the race itself. In certain places, and especially in the valley of the Kamchatka River, the population has become almost thoroughly Russified, and the old speech is here no longer current. Having become "orthodox" Christians, and diversely intermingled by marriage with the Russian settlers, the Kamchadales are becoming gradually absorbed in their masters, and the national type has even been effaced. The Kuriles, as those of the south are called, have not yet entirely lost their native speech, and those of the Penjina valley are the least Slavonized of the native tribes, their language having adopted but few Russian elements.

The number of still remaining full-blood Kamchadales is estimated at about 3,000. They are mostly of a remarkably gentle disposition, and very honest, except in the villages, where, by dint of cheating them, the Russians have taught them deceitful habits. Their house is open winter and summer to all comers, they never weary of being useful, and soon forget injuries, preserving an astonishing equanimity of temperament in the midst of much suffering and ill-treatment.

Before the arrival of the Russians they were their own masters, but the oppression of the first conquerors drove them to rebel in 1731 and 1740. Since then, however, they have abandoned all thoughts of resistance, and the humblest representative of authority is now received with a respect bordering on veneration. Pre-eminently conservative in all their ways, they never abandon a track once laid

Fig. 210.—Avacha Bay.
Scale 1 : 250,000.

0 to 5 Fathoms. 5 to 13 Fathoms. 13 Fathoms and upwards.

3 Miles.

down by their fathers until it has been trodden into an absolutely impassable rut. There is nothing of the heroic temperament of the Koriaks about them, and the burden of their plaintive songs, which seem to have been inspired by the mournful cry of certain sea-birds, is not the warlike deeds of their forefathers, but the humbler themes of love, labour, sleighing trips, hunting and fishing expeditions. In their imitative dances they mimic the movements of animals with wonderful

skill, bounding like the reindeer, trotting off like the fox, and even plunging into the water and swimming like the seal. Their old religious practices have been discontinued, though the report is still occasionally heard of a dog sacrificed here and there to the evil spirits, who scare away the fish and the game. Many ceremonies, which were formerly religious acts, have gradually become dramatic entertainments, and their superstitions are scarcely any longer to be distinguished from those of the Slav, Finn, Manchu, or other inhabitants of Siberia.

But for their dogs, the life of the Kamchadales would have to be completely modified during the eight winter months. These animals, which are wolfish in appearance, size, fur, and even voice, seek their food in summer along the river banks and in the forests. But with the first snow-flakes they return faithfully to their master's *balagan*. In courage and power of enduring hardships and hunger they are surpassed by no other animal. They have been known at times to drag the sleigh for forty-eight hours at a stretch without any food beyond the bits of leather torn from their harness. A team of eleven dogs will generally make from 36 to 48 miles a day, yoked to a sleigh carrying one man and a load of 450 lbs., and some have covered twice and even thrice the distance in the same time. During the long winter months, when the rivers are ice-bound and the sea wrapped in fogs or tossed by storms, social intercourse between the Kamchadale villages is kept up entirely by the dogs. But for them almost every family group would find itself blocked up in its underground dwelling during that season.

Topography.

In the vast region comprising the Chukchi and Kamchatka peninsulas no large centres of population have been developed. Nevertheless, Petropavlovsk, although no larger than a small European town, had recently taken rank as an important stronghold. Lying on the east coast of the magnificent Avacha Bay, this capital is completely sheltered from all winds, and large vessels may lie at anchor close in shore. In more favourable latitudes, and near populous lands, it might become one of the great emporiums of the world. But since the whale fisheries of the surrounding seas have lost their importance, and the peltry trade has been monopolized by a few dealers, Petropavlovsk has been greatly reduced, its population rapidly falling from about 1,000 to 500. The skins of the sea-bear taken in the Commander's Archipelago are forwarded by the American Company from this port to San Francisco, where they are dressed for the market. This capital of Kamchatka is proud of its monuments, erected to the two illustrious navigators, Bering and La Perouse, whose names still survive, one in that of the strait flowing between the two worlds, the other in that of the channel connecting the Seas of Okhotsk and Japan. The old fortifications of Petropavlovsk, now laid out in grass-plots and flower beds, recall the defeat of the Anglo-French, who during the Crimean war attacked this Kamchadale village at the extremity of the Old World.

GENERAL VIEW OF PETROPAVLOVSK.

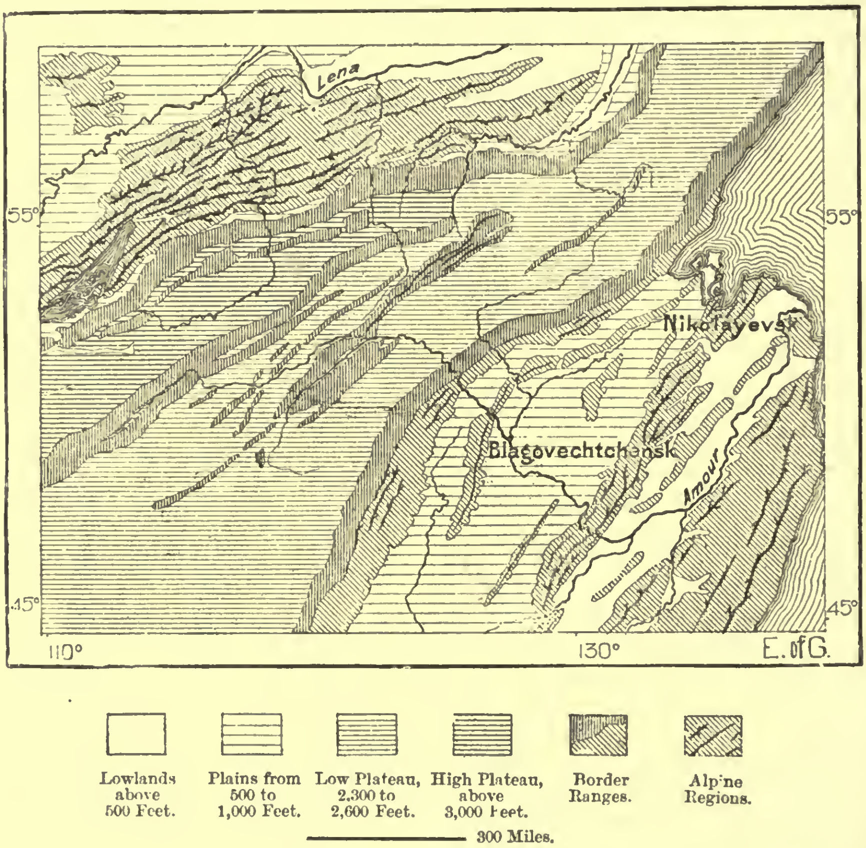
VII.—STANOVOI HIGHLANDS, AMUR BASIN, RUSSIAN MANCHURIA.

Of all the geographical divisions of Siberia, that of the Amur basin and neighbouring coast lands seems destined to the greatest political future. Washed by the Sea of Japan, projecting southwards between China and Corea, and bordering on China itself in the neighbourhood of the "Great Wall" formerly raised as a barrier against the northern barbarians, the valleys of the Amur and of its southern affluents, together with the coast of Russian Manchuria, represent in the extreme east the military strength of a nation of 100,000,000 souls. Here also is the only strip of vast Russian seaboard bordering on a sea which is freely open for nearly the whole year to the oceanic waters. The vessels sailing from the Manchurian ports have no Bosporus or Sund to pass through, nor are they ice-bound, like those of Archangel, for some eight months in the year. Although lying under the same parallels as the Provence and Catalonian shores, the inner bays of Possiet and Peter the Great are doubtless blocked by ice in the heart of winter. But this circumstance scarcely impairs the aggressive power of their fleets, which in any case might winter in some friendly port farther south. What Russian Manchuria wants before it can acquire the political ascendancy claimed for it by Russia is a civilised population, enriched by agriculture, trade, and industry. Meanwhile these regions have not increased in population as rapidly as Russian patriotism had expected; highways of communication are still lacking—distance has not yet been overcome. The line connecting Vladivostok with Kronstadt exists rather in theory than in reality, for the chain of Russian towns and cultivated lands intended one day to connect them is still interrupted by broad gaps throughout its eastern section. Nor is it likely to be rapidly completed, for most of the Amur basin is occupied with rugged highlands, lakes, and swamps, and here there are even many tracts still altogether unexplored. In Asia the Czar may still be said to possess little more than the framework of an empire.

The heights, hills, mountains, and plateaux limiting the Amur basin on the north form collectively one of those little-known regions which are still vaguely figured on our maps by the process of connecting together the already explored sections by means of shadowy crests sketched at random. The winding range traced from the Transbaikal plateau to the Chukchi peninsula for a distance of over 2,400 miles is in reality nothing more than a "Great Divide." Hence Middendorff proposes to call it the Stanovoi Vodorazdyel, or "Main Water-parting," instead of the Stanovoi Khrebet, or "Dorsal Chain," as it has hitherto been wrongly named. We know how greatly the watersheds may differ from mountain ranges, which in many places are crossed by them at right angles. A slight protuberance, the mere shifting of a rock, the damming up of a morass with decayed vegetation, or a dense growth of reeds will at times suffice to change the dividing line between two areas of drainage, whereas the direction of the main ranges is laid down for ages by the great disturbances, foldings, fractures, or upheavals that have taken place in past geological epochs on the earth's crust. These ranges themselves are doubtless modified from age to age under the action of the various terrestrial and

atmospheric agencies; but their axis remains none the less unchanged. It reveals itself by the underground rocks wherever the mountain has disappeared; it is continued beneath the watercourses crossing it from side to side; its presence is even conjectured under broad marine inlets. According to Nyerchinsk, the conventional frontier between China and Russian Siberia was intended to run along the crest of the Stanovoi; but this was never anything more than a fictitious limit. Natural frontiers are not formed by hypsometrical lines, but by distinct climatic, animal, and vegetable zones. On the southern slopes of the Stanovoi, as well as in the

Fig. 211.—Plateaux and Highlands of East Siberia.
Scale 1 : 21,800,000.



Lena basin, the hillsides and the low-lying tracts are alike covered with conifers, mosses, and lichens. Hence this properly forms part of the reindeer domain. Notwithstanding the treaties the "Reindeer Tunguses" roamed south of the Stanovoi to the neighbourhood of the Amur, at least 4° beyond the conventional frontier. On the other hand, the valleys of the Zieya, Bureya, and other affluents of the main stream offer vast pasture lands far more suited for horse-breeding than for reindeer herding. Habits and culture are here accordingly modified. In these grazing grounds live the "Horse Tunguses," a sedentary people averse to the visits of their nomad kinsmen, and who formerly paid the tribute regularly to the

Chinese authorities. But the Chinese Government had set up the frontier landmarks, not in the forests of the Stanovoi uplands, but at the confluence of the rivers about the natural limits of the prairie region between the Horse and Reindeer Tunguses.

The Stanovoi Uplands—The Yablonoi Range.

The explorations of Middendorff, Schwartz, Ustoltzev, Kropotkin, and others have clearly shown that the Stanovoi does not follow the winding course given to it by the early travellers. The highland masses forming the "backbone" of East Siberia consist rather of a broad tableland intersected by ridges running parallel in some places, in others at slightly converging angles. The whole of the Mongolian plateau, from the Koso-gol to the Great Kingan, forms the common base above which rise the various crests conventionally grouped on the maps as more or less winding mountain ranges. These uplands run mainly towards the north-east, in which direction they gradually contract. The rivers, also, which rise between the various ridges of the plateau run at first in the same general direction from the south-west to the north-east, or from the north-east to the south-west, and then make their way through the mountain gorges either towards the Lena and Amur, or else directly to the Arctic Ocean and Sea of Okhotsk. The chains rising east of the Stanovoi transversely to the Amur, and still farther east along the Pacific seaboard, belong to the same orographic system, and follow the same general north-easterly direction.

The highland region stretching south of Lake Baikal is limited towards the Chinese frontier by the highest section of the Stanovoi, known to the inhabitants of Daûria as the *Yablonovoi Khrebet*, or "Apple Mountains," probably from their crab-apple groves. They form a continuation of the Kentei of the Mongolians, but are in reality merely the edge of a plateau, and present the appearance of mountains only on their east side, above the Ingoda and Chilka. The western route, connecting Lake Baikal with Chita, rises to the summit of the Yablonovoi by an easy ascent, along which a railway might be constructed, and which terminates eastwards in lakes and swamps. The upper portion of the frontier range consists of granitic and palæozoic rocks covered with conifers, and strewn on their summit with chaotic masses of granite boulders. The rain, which falls abundantly on the summits, immediately disappears between these blocks, flowing under the rocks and the roots of the trees to the foot of the hills, where the underground rivulets reappear and expand into broad morasses, rendering the approach to the uplands very difficult for travellers. These Yablonovoi crests are developed with great uniformity, nowhere presenting the romantic aspect of limestone ranges. Their vegetation is also equally monotonous, the sombre foliage of the pine forests being varied only by the lighter tints of the birch.

The Sokhondo, or Chokhondo range, rising south of the Yablonovoi, near the Mongolian frontier, is commanded by the culminating point of the whole system. This granite mass raises its double-crested summit above a terrace strewn with huge boulders, and containing two lakes in which are collected the melting snows.

In summer a few patches of snow still lodge on the upper slopes of the Sokhondo; but the loftiest peak, although 12,000 feet high, does not reach the snow-line. None even of the northernmost Stanovoi crests are covered throughout the summer, although the Sokhondo receives a great quantity of snow in winter, and is nearly always enveloped in mists. The Tunguses and Buriats regard it as a formidable divinity, doubtless because of its generally cloud-capped and threatening aspect. Few of their hunters even venture to approach its stormy slopes.

The Daûrian Plateau.

The range beginning with the Sokhondo runs, like the Yablonovoi, north-eastwards to the plateau of the Vitim, while the chains follow the same direction towards the confluence of the Shilka and Argun. The Adon-cholon, one of these chains, which rises from the foggy plains as if from the midst of the deep, is limited at its southern base by a region which may be regarded as a fragment of the Gobi in Russian territory. This is the plateau known to the Slav colonists as the "Daûrian Steppes:" not that they bear any resemblance to the lowland plains of the Dnieper and Aralo-Caspian basin, but because of their barren slopes and brackish waters. They were formerly crossed from the Stanovoi to the Khingan by an earthen rampart, the remains of which are still visible here and there. It is said to have been raised by Jenghis Khan to protect the settled populations from the incursions of the nomads. This steppe region, which has a mean elevation of from 2,000 to 3,000 feet, is separated from the river Onon, the main branch of the Shilka, by vast pine forests, which arrest the moist winds. Hence the steppe itself is extremely dry, in many places lacking sufficient moisture to support the peonies, aconites, and lilies which impart such a charm to the Nyerchinsk steppe. In some districts water occurs only at intervals of 9 or 10 miles, and all the lakes on the plateau are brackish, with here and there incrustations of salt or magnesia, which looks like recently fallen snow around their shores. The Tarei, one of these basins, is usually figured on the maps as a double lake with an intervening strip of land. But the larger of these two reservoirs, although some 400 square miles in extent, is frequently dry, as when visited by Pallas in 1772, and again by Radde in 1856. An old channel connecting the two lakes, and the water-marks still visible round the shores of the numerous islands, are evidence of the far greater abundance of water in this basin in former times. At present the Dzun-tarei, the smaller of the two reservoirs, which is thoroughly saturated with salt and surrounded by a growth of reddish plants, is much reduced in size, while the Barun-tarei, the larger of the two, is merely a collection of stagnant pools, beds of salt, and vast reedy tracts, whence the Mongolian name of the Russian station Khulussutai (Ulussutai), or "Reed Town."

The surface of the Daûrian steppes is in several places thickly strewn with small pebbles of white quartz, jaspar, or agate, coming from the disintegration of the neighbouring rocks. Still there is a scant growth of grass sufficient to attract flocks of a few species of gregarious animals. This is the only part of Daûria

where the antelope *gutturosa* is met, and this country is also visited by the tiger, and by numerous herds of the *jaggetai*, or wild horse, no doubt allied to the *Equus Prjevalsky*, a new species recently discovered and killed by hunters sent from Zaïsan.* The Cossacks have hitherto failed to tame these magnificent animals, as the Chinese of the Hoang-ho have done. But the natives eagerly hunt them for their flesh and for their skin, and especially their tails, which are sold to the Mongolians, and by them used as a universal remedy for all the diseases to which their domestic animals are subject. Wild beasts are constantly migrating northwards across the Daûrian steppes, which accounts for the quantities of game here annually met by the hunter. On the other side of the Amur analogous movements take place, also caused by the changes of climate. The wild goats are always able to foresee severe winters, and especially heavy falls of snow, when they migrate in great numbers to the right bank of the Amur. In 1867, when the forests of Bureya were suddenly buried under large quantities of snow, they passed into Manchuria at a time when the Amur was already full of floating ice. Taking refuge on these floes, the animals, exhausted by fatigue, fell an easy prey to the inhabitants of the stanitzas. From the skins of these wild goats are made the *dakha*, or pelisses, universally worn in Siberia, always with the hairy side out, as a protection against the cold, and especially the wind.

The Daûrian ranges skirting the desert are destitute of vegetation on their southern slopes, in this respect resembling the Altaï, the Tian-shan, and even some regions of the Caucasus. The moisture necessary for forest vegetation is maintained better on the shaded than on the sunny side of these ranges. The fires kindled by the graziers in the spring of the year are also much more destructive on the escarpments facing southwards, where the dry grasses and brushwood burn to the top unhindered by the snows. But north of Daûria and the Shilka ravine the Stanovoi crests are equally wooded on both sides. Here the humidity is everywhere sufficient to support almost impenetrable forests, thanks to the fens and quagmires, the remains of old lakes which formerly washed the foot of these mountains. But above the forest zone there rise greyish granite crests, furrowed here and there by deep fissures. These are the bare ridges which have caused the Cossacks to apply the name of *Goltzi*, or "Naked Rocks," to the Stanovoi and all the East Siberian highlands.

North of the Amur the chief sections of the Stanovoi rise between the Zyeya and Aldan basins. Here several peaks are over 2,300 feet high, although none of them attain the elevation of the Sokhondo. Copious streams and rivers flow from their flanks towards the Amur, the Lena, and various direct affluents of the Pacific. Beyond the marshy plateau separating the Aldan and Ud basins, the ridge, which is much steeper on the side facing the Sea of Okhotsk than on that turned landwards, takes the name of Aldan or Jugjur, but none of its crests are much more than 3,250 feet. Yet, notwithstanding this slight elevation, this section of the main

* The skull and skin of one of these animals, now in the St. Petersburg Academy of Sciences, have been examined by M. Poliakoff, who, in a memoir published in March, 1881, by the St. Petersburg Geographical Society, discusses the relations of this new species to the domestic horse.

range is one of the richest in geological formations, granites, gneiss, and porphyries being here covered with old schists, and in some places even by Jurassic rocks. Towards the north, where it approaches the recent Verkho-Yansk formations, the Aldan range abounds in coal-fields, while basalts and trachytes occur in the neighbourhood of the Sea of Okhotsk, over against the volcanic peninsula of Kamchatka. The lead, iron, gold, and silver ores that have here been discovered could not fail to develop a large mining industry but for the severity of the climate.

West of Okhotsk and north of the depression, followed by the route from Yakutsk to the coast, is situated Mount Kapitan, so called by the Tunguses either in honour of some Russian captain, or possibly as the "Captain" of all this highland region. It marks the northern limits of the larch, and the beginning of the zone of lichens and reindeer moss. Yet there are no glaciers, and the crests are even completely free of snow, although these Stanovoi Mountains overlook valleys which are entirely filled with permanent ice. This remarkable contrast between the uplands and lowlands affords a striking illustration of the great difference in atmospheric pressure, snow and rain fall, and direction of the winds prevailing in Europe and Asia. The snows swept by the winds from neighbouring heights are banked up at the foot of the "Captain" in crevasses seldom lit up by the sun, where they are gradually converted into extensive ice-fields. Even the streams and rivulets of the neighbouring valleys freeze as they flow over their crystalline surface. These low-lying ice-covered tracts are the natural resort of the reindeer, which here find a refuge from the mosquitoes.

East of the Stanovoi another chain rising in Manchu territory, and variously named by Chinese, Mongolians, Golds, and Russians, runs south-west and south-east, terminating south of the Sea of Okhotsk in headlands indented by deep inlets, and continued seawards by the Shantar Archipelago. This Daûss-alin range has received from Middendorff the name of the Bureya Mountains, from the large affluent of the Amur which flows westwards parallel with the ridge. The Russians usually call it the "Little Khingan." The forests covering its slopes belong to a different vegetable domain from that of the rest of Siberia. The oak, unknown in the Lena and Yenesei valleys, prevails in many parts of the Bureya highlands, and on the whole deciduous trees are more common than the evergreen conifers. Here also begins the domain of the tiger, which haunts the thickets, and is known to the natives as the "lordly beast."

All the region bounded on the west by the Usuri and Lower Amur is occupied as far as the coast by hills and mountains, usually known collectively as the "Manchu Highlands." It forms a plateau divided into innumerable sections, and rising eastwards to a coast range, which presents its steepest sides to the Sea of Japan. Like the Aldan ridge, which it resembles in its elevation, bare crests, wooded slopes, and general north-easterly direction, the Manchu or Sikhota-alin system is crossed by but few passes, while the swamps and forests of the western slopes greatly impede the communications between the Usuri valley and the sea-coast. But in the south a large depression, in which the rain-waters are collected, enables the great Lake Khanka to communicate with the Saïfûn coast stream, north of the

Gulf of Peter the Great. The Sikhota-alin has often been represented as partially of volcanic origin, and basalt streams have been described as having flowed from the assumed craters of the range down to the Strait of Tatary, here forming steep headlands from 400 to 600 feet above the sea. But the volcanoes supposed to have been seen near Castries Bay seem to be nothing but sedentary sandstone rocks.*

The Amur River System

Of the four great Siberian rivers the Amur, although draining the smallest area, promises one day to become the most important water highway. In this respect, however, it is still far inferior to the rivers of the Ob basin, where all the riverain towns already communicate with each other by means of a regular and frequent steam service. While the Ob, Yenesei, and Lena flow south and north across the line of migration from east to west, and discharge their waters into the Frozen Ocean, the Amur winds mainly west and east, in the direction of the great historic routes, and disembogues in a sea open to navigation for the greater part of the year. Few other rivers have to traverse a greater number of rocky barriers in their gradual descent seawards. Rising on the Daûrian plateau, it has first to pierce the eastern escarpments of this region in order to reach the plains of its middle course, which are still about 2,000 feet above sea-level. It then flows through a gap in the Little Khingan range down to the lower plains separated by the Sikhota-alin hills from the sea. Even after forcing its way through this barrier to the ocean it is still confronted by the island of Sakhalin, dividing its channel into two branches, one of which flows round the north end of the island, while the other penetrates southwards into the Gulf of Tatary. Equal in volume to the three other great rivers of North Siberia, the Amur at all times occupied a position of paramount importance as an historic highway. It was the route followed by the Mongolians, Manchus, and all migrating peoples from the east of Asia, and it has now become the continuation of the South Siberian overland route, pursued in an opposite direction by the Russian conquerors and colonists. The lower course of the Amur thus completes the natural highway, which begins some 6,000 miles farther west, at the mouth of the Neva. The regions traversed by it have the further advantage of lying in a more temperate climate than the rest of Siberia. Some of its southern affluents even rise in the Chinese Empire under the 40th parallel, and consequently much nearer to the equator than to the pole.

More than half of the Amur basin being comprised in the still imperfectly explored regions of Mongolia and Manchuria, it is impossible to form a correct estimate of the area of the lands draining through this channel to the Pacific. They are roughly estimated at from 800,000 to 820,000 square miles, or about four times the surface of France. If the Kerulen, or Kurulun, be included in this

* Chief elevations of the Stanovoi, Bureya, and Manchu highlands:—

	Feet.		Feet.
Sokhondo (according to Radde)	8,170	Kapitan Pass	4,175
Stanovoi, between the Aldan and Zyeya	6,810	Lagar-aûl (Bureya range)	3,326
Mean height of the Aldan ridge	2,915	Mean height of the Sikhota-alin	2,915
Mount Kapitan	4,200	Mount Galoya, its highest peak	5,590

basin, to which, however, it belongs intermittently, the Amur, from its farthest source to the sea, will have a total length of 3,000 miles. The Kurulun rises on the southern slopes of the Kentei Mountains, a Mongolian continuation of the "Apple" range, and after skirting on the north one of the terraces of the Gobi desert, discharges into the Dalai. This "Holy Sea"—for such is the meaning of the word—also receives the Ursûn, an emissary of Lake Bûir-nor. But these affluents from the desert contribute but a small quantity of water, most of which is lost by evaporation in the lacustrine reservoir. Hence the turbid and sluggish Dalai-gol, the outlet of the lake, is a narrow stream, which, however, is soon enlarged by the rapid Khaïlar, the true head-stream of the Argun. During the spring freshets of this torrent, which rises in the upper valleys of the Great Khingan range, a portion of its waters flows back to the Dalai-gol, and through it to Lake Dalai, whence large shoals of fish penetrate through the Argun into Russian territory. Thus, although the "Holy Sea" is situated in Mongolia, the Russian fishers indirectly benefit by the abundance of its animal life, of which the Mongolians themselves make no use.

After its junction with the Dalai-gol the Khaïlar takes the name of Argun, and flows north-east parallel with the various Stanovoi ridges, and along the political frontier of China and Russia to its confluence with the Shilka. The latter river lies mostly within Russian territory, although the Onon, which, with the Ingoda, is its chief affluent, rises in Mongolia, and enters Russian Daûria after skirting the southern base of the Sokhondo. The united Argun and Shilka form the Amur proper, but it is not easy to say which should be regarded as the main head-stream. The Argun has the longer course, while the Shilka, flowing through a moister region, has probably a larger volume, and its waters are less charged with sedimentary matter. Historically also the Shilka is the more important of the two, for on it the Cossacks embarked in their repeated attempts to obtain a footing on the banks of the Amur, or maintain their settlement in this valley previous to its final conquest by Muraviov in 1853. In the south the Mongols, ever in the saddle, take the road across the ringing steppe, while the Russians ascend and descend the water highways, and the Shilka, navigable throughout its lower course, offered them a direct route eastwards beyond the Khingan Mountains. The Tunguses of the Shilka also apply this name to all the lower stream below the confluence of the Argun. The name Amur itself is of unknown origin, being derived by some from the Giliak words Ya-mur—that is, "Great River"—while others regard it as a modification of Mamu, the name current amongst the natives along its lower course. Others, again, suppose that the first Russian invaders, encamped at Albazin on the little river Emuri, gradually extended the name of Emur or Amur to the whole region, and to the river watered by it. However this may be, each of the nations settled in its valley gives it a different name. For the Golds it is the Mango; for the Yakuts the Kara-turan, or "Black River;" for the Manchus the Sakhalin-ula, or "Blackwater;" for the Chinese the Helong-kiang, or "River of the Black Dragon," doubtless in reference to the dark colour of its waters.

At the Stryelka ferry, where the two head-streams meet, the Amur is already

from 20 to 24 feet deep, with a breadth of nearly 540 yards. Narrowing between the spurs of the Great Khingan and the side ridges of the Stanovoi, it trends eastwards through a series of defiles, beyond which it flows to the south-east along the base of the volcanic Ilkuri-alin range. Lower down extensive plains, compared by Middendorff to the prairies of the New World, stretch along both its banks, but especially on the left between the Zyeya and Bureya affluents. But instead of being covered with grasses, they are clothed for vast distances with thickets of dwarf oaks, hazels, and other bushy growths. Like the American prairies, they yield excellent crops wherever cleared.

Like those of the other great Siberian rivers, the right bank of the Amur has normally a higher mean elevation than the left. After receiving the Bureya the Amur pierces the Little Khingan range through a defile 100 miles long, and grander than that of the Rhine between Bingen and Coblentz, though lacking the charm imparted by riverain towns, cultivated slopes, and craggy heights covered with ruined or restored castles. No regular highway has yet been laid down through this ravine, where the beaten path is under water during the floods. Hence horsemen wishing to cross the Bureya range are obliged to turn aside from the Amur and make their way through the forests, in order to avoid the headlands, often several hundred yards high, projecting into the deep waters of the river. Beyond the defile, which runs north and south, the Amur again turns eastwards, and then north-eastwards, thus following the impulse given to it by the great Sungari or Kuen-tong affluent, which the Chinese regard as the main stream. Like the Ob-Irtish, the Yenisei-Angara and the Argun-Shilka, or Amur, the Sungari is formed by the junction of two rivers nearly equal in volume, the Upper Sungari and the Nonyi.

The Sungari and Usuri Rivers.

The Sungari is really the main branch of this fluvial system, if not in length and volume, at least in the direction of its valley, which runs parallel to the Khingan, the Manchu Mountains, and generally to the axis of all North-east Asia. At the confluence the turbid waters of the Sungari, now of a greenish, now of a milky hue, occupy about two-thirds of the common bed. Above the confluence the Amur and its tributaries are subject to great vicissitudes, and fall rapidly in summer, a circumstance which shows that the highlands of the upper basin are not elevated enough to bear any large quantities of perpetual snow. The streams from the melting snow-fields are insufficient to maintain the normal level of the river during the dry season, so that at this time the navigation is much endangered by the rapids. The mountains enclosing the Sungari basin are not sufficiently known to estimate the importance of the contributions from their melting snows. But it is probable that the Shan-alin, or "White Mountains," forming the eastern limit of the basin, reach the line of perpetual snow, as is indeed indicated by their name, and thus contribute to increase the annual inundations. But the floodings of the Sungari and other East Siberian streams are due mainly to the rains brought by the summer monsoons, which blow from the north-east towards the Mongolian

plateaux. Below the confluence the Amur then assumes the aspect of an inland sea. Its islands disappear, and all its ramifications for a distance of 10 or 12 miles are blended in a single stream. Villages are swept away, with the very banks on which they stood, and whole forests are uprooted and carried along with the current. Since the colonisation of the Lower Amur by the Russians it has been

Fig. 212.—Lake Khanka.
Scale 1 : 1,500,000.

30 Miles.

found necessary frequently to shift the sites of the stanitzas to higher ground, less exposed to the action of the stream.

Nevertheless the question of a more systematic settlement of the Amur regions, chiefly by communities of Slav origin, is now engaging the serious attention of the authorities. Since the ratification of the treaty with China, settling the Kulja frontier, the Amur basin has naturally acquired fresh importance, and the Russian Government, it is expected, will soon bring forward a comprehensive scheme of colonisation in a country which holds out far brighter prospects to the peasantry than many of the bleak and arid steppe lands of European Russia. Projects have

already been discussed and partly adopted, which are calculated to encourage wholesale immigration by the promise of pecuniary aid and free grants of good land along the fertile banks of the Amur and its numerous tributaries.

Flowing entirely within Chinese territory, the Sungari belongs historically and socially to a very different world from that of the Amur. While the latter flowed till recently beyond the domain of cultured nations, and until the Russian conquest was navigated only by the boats of the Tunguses and Golds, the Sungari waters a basin studded with numerous cities, traversed in various directions by regular highways of communication, and covered with extensive cultivated tracts. The basin of the Amur proper throughout its course is little more than an unexplored wilderness, while dense populations are crowded in the districts above Siansin, on the Middle Sungari. Although forming part of the same hydrographic basin, the valleys of the Amur and Sungari have different and even hostile centres of attraction. On the Amur the current of migration and trade flows west and east from Irkutsk to Khabarovka and the Pacific seaboard, whereas the teeming populations of the Sungari turn southwards towards Mukden, Pekin, and the Yellow Sea. There is little communication between the Chinese Sungari and the Russian possessions, and it was with difficulty that Maximovich, Usoltzev, Kropotkin, and Khilkovskiy penetrated from that river into the Celestial Empire.

But the Usuri, which next to the Sungari is the chief affluent of the Lower Amur, belongs henceforth to the Russian world. Chosen in 1860 as the limit between the two empires, this river flows south-west and north-east between the two parallel crests of the Shan-alin and Sikhota-alin, and its valley has become the military and trade route leading from the Amur to the southern ports of Russian Manchuria. The Usuri takes this name only in its middle course below all the upper tributaries. One of these, the Sungacha, flows from an "inland sea," for such is the meaning of the Chinese word Khan-kai (Han-hai), which has been modified by the Russians to Khanka, or Khinka. This great lake, whose mean area exceeds 1,200 square miles, must, notwithstanding its name, be regarded as merely a permanent flooding, for its depth seems nowhere to be more than 32 feet, while in many places there are scarcely 12 inches of water at half a mile from the shore. But during the summer monsoons, which bring such a quantity of moisture to the Lower Amur region, the Khanka overflows far and wide, flooding the surrounding low-lying tracts, and for the time becoming a veritable "inland sea." In its normal state it is divided into two parts, the "Great" and the "Little" Lake, separated from each other by a perfectly regular strip of sand, which is rounded off towards the north in such a way as to form an exact continuation of the curve of the shore running east and west. This geometrical formation, which resembles so many others of analogous form on the Pacific seaboard, is a rare phenomenon in inland basins of small extent, which are mostly sheltered from the winds, while the winds themselves seldom blow regularly from the same quarter. But Lake Khanka is completely exposed to the southern winds, which prevail during a great part of the year. Thus is formed on the surface of the basin a regular swell setting northwards, and developing the curved outline of the shore. Lake Khanka abounds in

fish. During the early years of the Russian occupation the Usuri also was rich in every sort of fish, especially carp, sterlet, and salmon. In fording the channels by which it communicates with the lake, travellers took them with the hand by the dozen, and in some places they were so numerous that the dull murmur of their fins was heard from the shore.

The Lower Amur and its Delta.

After receiving the Usuri the Amur flows altogether in Russian territory. It is still joined on both sides by important tributaries, which, however, seem to add little to its volume. Ramifying into various branches enclosing grassy islands, it winds along its broad valley, at intervals impinging against the foot of the hills which skirt its right bank. Its course is fringed by lakes and extensive marshes,

Fig. 213.—Isthmus of Kizi.
Scale 1 : 900,000.

0 to 10 Fathoms. 10 Fathoms and upwards.

24 Miles.

especially on its left side, and these serve to receive its overflow during the floods. The Kizi, one of these lakes, occupies east of the river a great part of a transverse depression which runs in the direction of the Gulf of Castries. Here the valley of the Lower Amur resembles in its form that of the Lower Danube, which runs towards the Isthmus of Kustenje, as if to fall directly into the Black Sea, but which, nevertheless, takes a sudden bend at right angles to the west, and then to the north round the peninsula of the Dobruja. In the same way the Amur, although half filling the Isthmus of Kizi by a lateral discharge, deflects its main channel northwards to a point where it at last finds an opening to the Pacific. Lake Kizi itself is only 2 feet deep in winter at low water, rising during the summer floods to nearly 10 feet. A low ridge 10 miles broad separates the lake from the coast; but the native canoes are able to utilise the small river Taba flowing from this ridge, whereby the portage between the two slopes is reduced to little over a mile. Since

1857 the engineer Romanov has been surveying this portage with a view to the construction of a railway 30 miles long, by which travellers would be enabled to avoid a détour of 300 miles by the dangerous mouth of the Amur. But such an undertaking will be of little use so long as the local Russian settlements remain in their present undeveloped state. In 1878 there was not even a good carriage road across the isthmus.

After being deflected northwards the Amur still communicates right and left with several lakes, which recall an epoch when the river sought a more direct outlet seawards. In this part of its course the Amur is, so to say, still incomplete. Its waters form a labyrinth of swift currents, sluggish channels and lakes, constituting a sort of debatable ground between the river and the sea. Here the large river Amgun, flowing from the Bureya Mountains, joins it in a sort of inner delta, where

Fig. 214.—Mouths of the Amur.
According to the Admiralty Chart, 1868.
Scale 1 : 740,000.

0 to 2½ Fathoms. 2½ Fathoms and upwards.

15 Miles.

the currents are displaced with every freshet, thus incessantly changing the form of the islands and sand-banks. Near the Giliak village of Tir, over against this delta of the Amgun, there stands a cliff on the right bank, on which have been erected three columns of marble, porphyry, and granite, covered with Mongolian inscriptions. They mark the limits of the empire under the Yoan dynasty, when China was subject to the Mongolians, towards the end of the thirteenth and during the fourteenth century. On Remozov's chart, published in the seventeenth century, a town is indicated at this spot as marking the limits of Alexander the Great's conquests, who "buried his arms and left a tower here." Such was at that time the tradition of the Cossacks. In any case the cliff of Tîr is well situated as the frontier landmark of an empire, for immediately below it the Amur bends towards the north-east, and then eastwards, in search of the gap through which it discharges

seawards, or rather into the estuary obstructed with sand-banks which forms the

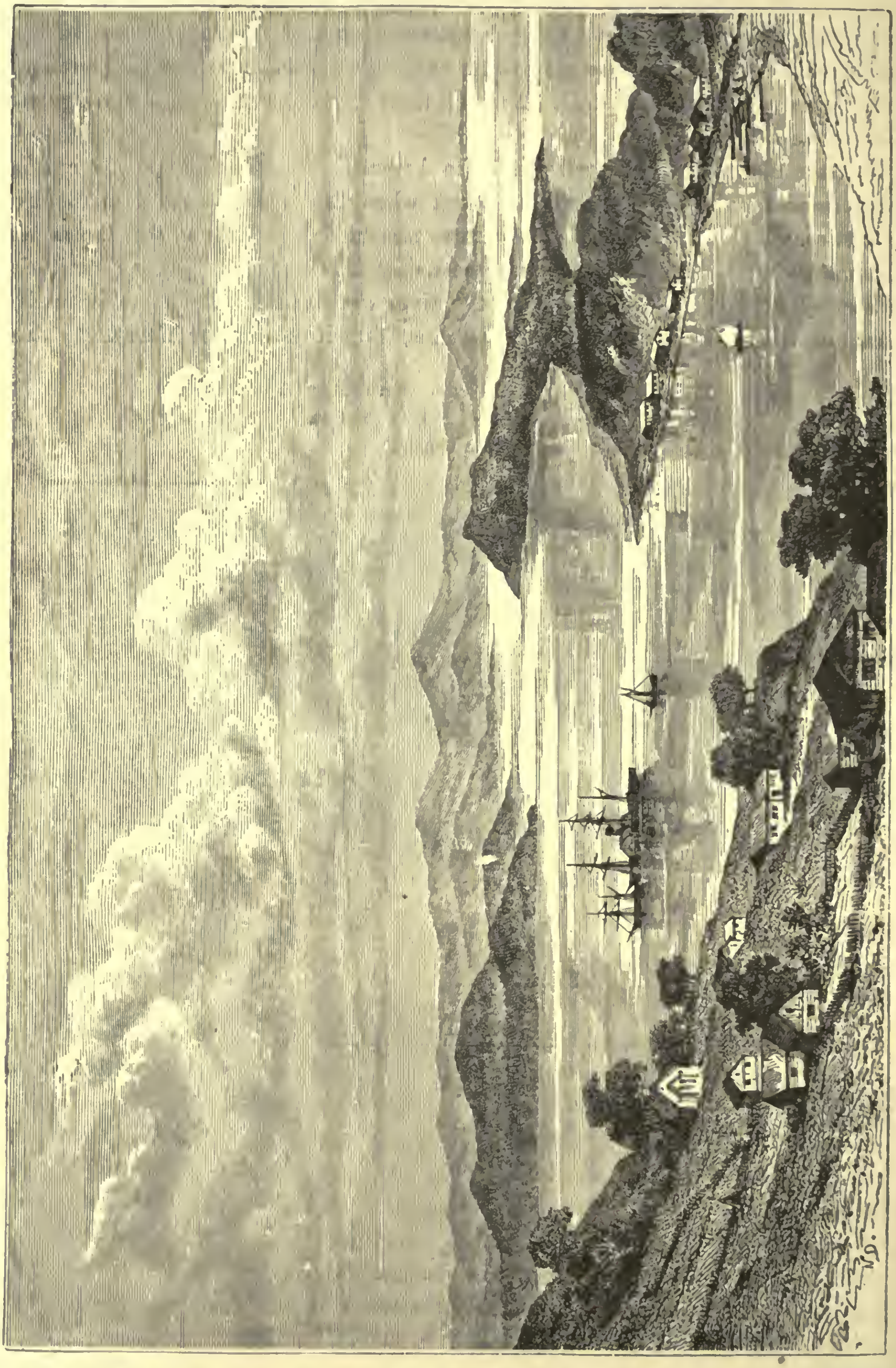


Fig. 215.—Bay of the Golden Horn.

Gulf of Tatary. From the mainland to the island of Sakhalin the sea is occupied by shoals intersected by navigable channels, whose windings are shifted with every

storm, and through which the pilots thread their way sounding-line in hand. These difficulties at the entrance, combined with the annual frosts which close the mouth of the Amur for six months, are the great obstacles to trade, and partly neutralise the advantages presented by the river and its affluents, which have a total navigable waterway estimated at upwards of 6,000 miles. In the lacustrine labyrinth of the lower course, which is still but little known, the navigation is extremely dangerous in rough weather. In a single storm over forty Russian craft laden with corn were wrecked, and most of the supplies for Nikolayevsk and the posts on the Usuri swallowed up.

The Manchurian Seaboard.

North of the Amur lagoon a few streams, rising in the hilly region bounded north-west by the Stanovoi and south-east by the continuation of the Bureya Mountains, flow to the fiords of the Sea of Okhotsk. Facing these inlets are the numerous islands of the mountainous Shantar Archipelago. In another climate, or in the neighbourhood of well-peopled coast lands, these islands would have a great commercial and strategic importance, as sheltering the inner bays and their innumerable creeks. But amid the cold fogs of the Sea of Okhotsk all these excellent havens are utilised only by a few local fishermen. On the more favoured southern seaboard stretching south of the Amur the Russians must seek for harbours capable of entering into commercial relations with the whole world. This is the secret of the diplomatic activity displayed by them to obtain in 1858 a joint right with the Chinese to all the coast region between the Amur and Corea, and then to acquire its exclusive possession in 1860.

Even the rocky seaboard facing Sakhalin possesses a few good ports, which might have a certain commercial utility were the surrounding regions colonised, and easy means of communication opened up across the coast range and forests. Thus the Bay of Castries, first visited by La Pérouse in 1787, and so named by him, might accommodate a large number of vessels of light draught. Its position in the neighbourhood of the Amur must sooner or later render it an important place. Farther south, Stark Bay, the Imperial Port, the Gulf of Plastun, and those of Vladimir and Olga, follow successively along the coast, which the Chinese and Russian traders have already learnt to frequent, notwithstanding the fogs and storms prevailing in this dangerous Sea of Japan. Here the staple export is the "sea-cabbage," a species of seaweed forwarded to China and Japan, where it forms an article of food for the poor, and is used in the manufacture of glue.

The Vladimir and Olga coasts have been compared to those of Finland, owing to their indentations, the granite reefs surrounding them, and the evident traces of upheaval that have here been observed. The old beach may still be seen at various elevations above the present sea-level. But whether or not it lies within the zone of slow upheaval, the portion of the coast bending due west to the neck of the Corean peninsula presents the aspect of those Finland or Scandinavian shores, which are cut up and indented with endless gulfs, bays, and creeks, and varied with innumerable groups of islands, islets, and reefs. One of these inlets, 120

miles broad east and west, forms the gulf named after Queen Victoria by the English, but which the Russians have dedicated to Peter the Great. It forms quite an inland sea, in which the conquerors had an embarrassing choice of sites for a good naval and trading station. In the east lies America Bay, which receives the waters of the Su-chan, a navigable river whose two branches form the two convenient ports of Wrangell and Nakhodka. In the centre are the Gulfs of Usuri and Amur (*Usuriskiy* and *Amûrskiy*), between which projects the peninsula on which stands Vladivostok. Lastly, in the west are the winding bays of Possiet, better defended even than the harbour of Toulon by rocky peninsulas, tongues of

Fig. 216.—Bay of Castries.
Scale 1 : 157,000.

land, and strips of sand curved like the claws of a crab. This military station, with its guns always turned southwards, forms the present limit of the Russian Empire towards China and Japan.

Climate of Manchuria.

Even in the southernmost part of Russian Manchuria, the winter climate is very severe. Although the Gulf of Peter the Great is never frozen at a certain distance from the shore, all the creeks penetrating inland are ice-bound from December to March, and for over one hundred days the port of Vladivostok is blocked. At this

VICTORIA BAY OR GU

Depth o

Under 30 feet   30 to 65 feet   65 to

Scale

0

NEW YORK,

OF PETER THE GREAT.

the Sea.

eet | 130 to 200 feet | 200 feet & beyond

5,000.

10 Sta. Miles.

PPLETON & Co

place the annual temperature is more than 17° lower than under the same parallel in West Europe.* For five months Lake Khanka is covered with ice, which at times acquires a thickness of over 3 feet. In the Amur basin the glass not unfrequently falls to 38° Fahr., and at the Nyerchinsk works it has fallen even as low as 46° Fahr. On the other hand, the summer heats are almost tropical, even on the

Fig. 217.—Harbour of Olga.
Scale 1 : 165,000.

0 to 16 Feet. 16 to 32 Feet. 32 Feet and upwards.
3 Miles.

sea-coast the temperature rising, as at the port of Olga, to 96° or 97° Fahr. Although bordering on the Pacific, this part of Siberia is still included in the continental climate, a circumstance due to the mean direction of the atmospheric and marine

* Mean temperature of Vladivostok (43° 05' north latitude), 40° Fahr.; of Marseilles (43° 17' 50" north latitude), 58° Fahr.

currents. The warm waters of the Pacific Ocean flowing along the east coast of Japan are deflected to the north-east, thus avoiding Sakhalin and the Kurile Islands, and returning southwards along the shores of Vancouver, Oregon, and California. Hence the Asiatic seaboard is deprived of the influence of the warm currents from the south, while the ice accumulating in winter in the Sea of Okhotsk and Gulf of Tatary tends to lower the temperature of the maritime regions throughout the season. In winter also the prevailing winds blow from the north, in summer from the south, so that the normal temperature of both seasons becomes intensified, producing those extremes of heat and cold which are everywhere characteristic of the true continental climate. The chief contrast between the inland regions of the Upper Amur basin and the coast districts of the Lower Amur and Manchuria rises from the action of the Central Asiatic plateaux and of the Pacific waters on the atmospheric currents. In the Upper Amur region the north-west polar winds and the south-west trade winds prevail regularly in winter and summer respectively, whereas the atmospheric currents of the eastern seaboard blow from the north-west and south-east during the corresponding seasons. We know what vast quantities of moisture are brought by these south-easterly monsoons to the Amur basin, and to the shores of the Aryan and Okhotsk. During their prevalence the storm-tossed waters of the Sea of Okhotsk are wrapped in dense fogs, through which the solar rays seldom penetrate.

But while the climate of East Siberia is thus distinguished by its extremes of heat and cold, of dryness and humidity, it has at least the advantage of a great regularity in its annual changes, and is entirely free from those sudden transitions of temperature which are observed in West Siberia. The dry colds of winter, the moist summer heats, prevail throughout those seasons without any violent change. In February, the driest month in the year, the snow or rain fall at Nyerchinskiy Zavod is fifty-eight times less than the rainfall of the wet season. At Vladivostok the difference between the winter snows and summer rains is even still greater, the former being about eight hundred and forty times less than the latter. In 1858, Venyukov experienced forty-five days of incessant rains in the Usuri valley. In this district, and along the south bank of the Amur, these annual downpours rot the crops of the Cossacks, who have not yet learnt to imitate the Chinese in adapting their agricultural system to the climatic conditions.

Manchurian Fauna and Flora.

With the phenomena of the peculiar East Siberian climate naturally correspond certain special features of its flora and fauna. The forests of the Amur basin are not uniformly composed of the same species of conifers, like the *taiga* of the regions draining to the Frozen Ocean. There is a great diversity of forms, but little variety in their distribution, pines, firs, cedars, and larches mingling freely, not only with the Russian birch, but also with such deciduous plants as the oak, elm, hornbeam, ash, maple, linden, aspen; and amongst these forest trees there are some which grow to a height of 100 feet, with stems nearly 4 feet thick. In the southern

parts of the Usuri plains, and on the slopes of the Sikhota-alin, the leafy species prevail over the evergreen conifers. In the forests of the Amur the wild vine twines its tendrils round the pines, and brings its fruit to maturity, although the domestic vine has not yet been profitably cultivated. On the Upper Usuri the Chinese have plantations of the ginseng (*Panax ginseng*), that valuable plant whose root, "a specific against all disorders," fetches its weight in gold. The walnut, peach, and wild pear interlace their branches in the woods, and the attempts already made at horticulture round about the villages show that the Usuri region might become one of the finest fruit-growing countries in the world. Altogether the flora of the Amur approaches that of China, and even of Indo-China, while

Fig. 218.—Herbaceous Vegetation on the Islands of the Amur.

many of its species form a connecting link between the vegetation of the Old and New World. But the pride of East Siberia are the thickets of herbaceous plants growing in the alluvial lands, along the banks and on the islands of the Amur and its great tributaries. Here the umbellifers, mugwort, reeds, and various species of cereals intertwine to a height of 10 feet their stalks, bloom, and fruits, and are often still further interlaced by the manifold coils of tall creepers. There are many densely covered tracts impenetrable except with the axe in hand, and those who venture into these thickets have usually to follow the tracks opened through them by the wild beasts, for the wild boar, deer, and wild goat find a better cover in these tall grasses even than in the forest itself. The woodlands of the Usuri are also haunted by the tiger, fierce as the royal beast of the Bengal jungles,

and he is here associated with the panther, bear, and sable. Thus are the southern types intermingled with those of the north in the rich animal kingdom of this region, which is allied at once to those of Siberia and of China.

Inhabitants—The Golds and other Tungus Tribes.

Ethnically speaking, the Amur is still a Tungus river. Apart from the civilised Chinese and Russians, all the riverain population, from the Argun and Shilka confluence to the Usuri junction, consists of Tungus elements. But the Lower Amur and coast regions belong to the Giliaks, a people of a different race, allied to the Kuriles and Kamchadales.

The Tunguses of the Amur are divided into several distinct tribes, some of which maintain few relations, except of a hostile character, with each other. The Lamuts, who occupy the west coast of the Sea of Okhotsk, are for the others simply the "People of the Sea." The Oroches, or Orochons, who had dwindled to about 260 in 1875, form a few family groups on the banks of the Shilka and Upper Amur. From the Manegrs, their eastern neighbours, they are distinguished only by the traditional custom of using the reindeer as mounts. Both the Oroches and Manegrs, although mostly baptized, none the less preserve their shamans and domestic idols, as well as the teeth and claws of animals used as amulets. Hitherto the Chinese have had greater influence over them than the Russians. Their dress and ornaments are evidently copied from southern models, while their features are clearly the result of alliances between the Tungus women and Chinese colonists. This process of assimilation, which is gradually transforming the native tribes, is seen, especially on the right or Chinese bank of the Amur, in the neighbourhood of the town of Aïgûn, which is the civilising centre of the whole country. The Daûrs, descendants of nomads of like name, who formerly lived farther west in the present Daûria, have become sedentary and agricultural. Most of their houses are built in the Chinese style, with vegetable gardens, orchards, well-tilled fields, and their religious rites are chiefly borrowed from the Buddhist systems. They regard as inferiors the Birars—that is, the "River" Tunguses—horse and cattle breeders, who still dwell north of the Amur, over against the Daûr settlements.

The Golds, another Tungus people, residing chiefly on the right bank of the Amur, and along the Sungari and Usuri Rivers, also occupy a few villages on the left or Russian side, between the ford of the Usuri and the junction of the Gorin. They are a timid race, who generally shrink from all contact with the Chinese, Manchus, and Russians. Yet they have already borrowed some of the usages of their civilised neighbours, and, like the Chinese, shave the hair, leaving nothing but a "pigtail" on the top of the head. The Golds live almost exclusively on the fish which abounds in the streams of their territory. They are excellent boatmen, and live on the water as on the land. When the river is rough they use large vessels with square bows, and in calm weather light craft made of birch bark. They never till the soil, and have but few vegetables, but occasionally barter their sable furs with the Manchus for rice and honey. They are very fond of animals, and surround their

GÔLD TYPES AND COSTUMES.

dwellings with multitudes of dogs and swine, which live, like themselves, on a fish diet. They also keep menageries of bears, wolves, and foxes, as well as aviaries of geese, wild duck, and eagles. Various religious superstitions associated with the last-mentioned birds of prey have even earned for them the title of "Eaglets," conferred on this tribe by the Manchus. In the peninsular region, comprised between the Sungari, Amur, and Usuri, the tiger makes frequent visits to their villages, nor do they always venture to resist the "lord," who, they suppose, represents a royal tribe, ruled over by the "Spirit of the Mountains," the Shan-shen of the Manchurian Chinese. A traveller relates that during the winter of 1857-8 a tiger came every night for his meal, consisting of two dogs, which the Golds tied up to a tree outside the village. But when they had no more victims for their terrible visitor, they were making preparations to sacrifice their own children, when some Cossacks happening to pass that way rescued them from their importunate guest.

North of the Golds are other Tungus tribes, the Manguns, Samagirs, Ngatkons, Nigidals, and others settled on the banks of the Lower Amur and Amgun. The Manguns resemble the Golds in speech, religion, habits, and fondness for caged eagles and other animals. But they are more cultured, thanks to the influence of the Manchus, now succeeded by that of the Russians. The little houses erected by them on the graves of the dead are adorned with curious carvings in exquisite taste. The Nigidals, who dwell quite apart on a tributary of the Amgun, seem to be descended from a people who were formerly far more civilised than at present. The men of this tribe are perhaps the most honest and trustworthy of the noble Tungus race. In order to keep aloof as far as possible from the Yakut, Russian, and Manchu traders, they have been obliged to withdraw to regions of difficult access. Possessing a large quantity of precious objects and of textile fabrics embroidered in the Chinese taste, and testifying to the influence formerly exerted over them by that race, they refuse to part with these highly valued articles, with which they are accustomed to array the bride and their dead.

The stone age still survived till quite recently in this region, and even much farther south on the Manchurian seaboard, where it was continued down to the beginning of the present era. Some of the Usuri tribes were accustomed to send hundreds of thousands of arrows to the Coreans, doubtless in consequence of the excellent quality of the stone supplied by their quarries for the manufacture of arms.

The Tazî, Mandzi, Giliaks, and Russians.

The Tunguses of the coast between the Amur and the Gulf of Peter the Great, branches of the Oroches and Golds, are by the Chinese called Yu-pi-ta-tz'; that is, "Fish-skin-clad People," a name which the Russians have shortened to Tazî. Those who have preserved the old fashions still wear garments of salmon skin, adorned with very elegant designs. But in the hills and on the west slope of the Sikhota-alin the Tazî no longer deserve their Chinese appellation, for they now dress like the other Tunguses, either in the skins of animals or in Russian and Chinese

clothes. The Tazî are honest and upright, and, like most of the Tunguses, very hospitable. But they have not succeeded in preserving their independence, having for the most part fallen into the hands of the Mandzi. These Mandzi, or Mant-zi', are Chinese immigrants who have in an economic sense become the masters of the land, and who till recently had a separate government, which, to the great relief of the people, has now been abolished. The chiefs claimed the privilege of inflicting barbarous punishments on their subjects, cropping their ears or even burying them alive for real or imaginary offences. They have no doubt taught the Tazî a good method of agriculture, but they take care to profit by them as money-lenders and traders. They are also the owners of the mines and the outfitters of the fishing-smacks, and in their interest the sands of the streams are washed for gold, and the "sea-cabbage" and trepang collected for export. The Tazî are required by usage to obtain their marriage licenses from the Mandzi trader, who sells at a high figure the official yellow paper. He also presides at burials, and "for a consideration" embellishes the Tazî dwelling with tapestries representing the god Buddha. Crushed by this oppressive system, the Tazî are rapidly diminishing. In 1874 they had been reduced to 250 souls, and, as the Mandzi all take native wives, the Tazî will have probably ceased to exist as a distinct nationality in a single generation. All the Tunguses of South-east Siberia are variously estimated at from 10,000 to 13,000.

Travellers and Government officials calculated that in 1873 there were from 3,000 to upwards of 7,000 Chinese on the Russian seaboard. But this element is rapidly increasing, and tens, if not hundreds of thousands, of "Celestials" would flock to this region under a free system of migration. In the sixteenth century the country was occupied by numerous colonies of Chinese, who possessed towns and forts in many places. But in 1605—7 they were five times attacked by the Manchus, who burnt their cities and villages, slaughtered most of the inhabitants, and carried off the rest into slavery. There remained but a few fugitives hidden in the woods and marshes, afterwards joined by fresh immigrants attracted by the cultivation of the ginseng and the gold-washings. It is the descendants of these Chinese intruders who at present occupy the country under the name of Mandzi—that is, "Free Men"—although Palladius regards this name as a term of reproach given by the Chinese to their expatriated fellow-countrymen. The Mandzi call themselves Pao-tui-tz'; that is, "Walkers," or "Runners." In 1861, after the cession of the maritime region to Russia, the Chinese Government forbade its subjects to migrate with their wives and families to this region. The richest amongst those already settled here returned to China; the poor alone remained, and were afterwards joined by vagrants and brigands from Manchuria. Such are the chief elements of the Chinese population in the maritime province. Some Corean immigrants have also found refuge in Russian territory, notwithstanding the sentence of death issued against them. In 1868 they already numbered over 1,400, all industrious husbandmen. But the inundations of the following year having driven multitudes of victims to seek an asylum in Russia, the Corean immigration was temporarily interdicted. Some of the fugitives were even sent back, and beheaded on their

return, while others were banished to the ports on the Gulf of Tatary and to the banks of the Amur. In 1873 the Coreans settled in the maritime province numbered altogether about 3,500, over half of whom had allowed themselves to be baptized.

Before the arrival of the Russians the inhabitants of the Lower Amur were the Giliaks, or Kilé, kinsmen of those living in the island of Sakhalin, and allied to those mysterious Ainos who are the subject of so much discussion amongst ethnologists. They lack the open and bright expression of most of the Tungus tribes, and their small eyes sparkle with a dull glitter. They have a flat nose, thick lips, prominent cheek bones, black hair, and tolerably full beard. Dwelling farther from the Manchus than do the Tunguses of the Amur, they are also far more savage, although amongst them are found blacksmiths, mechanics, and even skilful carvers. The travellers who have come in contact with them are not eloquent in their praise, describing them as false, thievish, and vindictive. But the Giliaks have at least a highly developed sense of freedom, recognising no masters, and governing themselves according to usage alone. Tradition regulates their feasts, marriages, funerals, and ceremonies observed when setting out for the chase and on other important occasions. The betrothed, purchased by her father-in-law in her fourth or fifth year, is brought up with her future husband till her majority. In some communities the dead are burnt; in others the coffins are suspended to the trees, or placed on platforms near their cabins. The soul of the departed takes refuge in the body of his favourite dog, which is consequently fattened up and immolated on the grave of its master.

Fire is held in no less respect by the Giliaks than by the Tajiks of the Pamir. No consideration in the world would induce them to remove the live coal from one hut to another, for the fire once kindled must never leave the hearth which it has consecrated. The *kohr*, or bear, representing the Kur, or lord of the heavens, is one of their chief divinities, whom, however, circumstances occasionally compel them to devour. They trap it in winter in its lair, and, after securing it with a leather noose, drag it along with shouts and cries intended to stupefy their half-awakened but still formidable victim. It is then kept in confinement, nourished and fattened on fish, and at last slain on its feast-day, after a fight in which the assembled multitude attack it without arms. With this may be compared what Miss Isabella Bird tells us regarding a similar practice amongst the Ainos of Yezo: "The peculiarity which distinguishes this rude mythology is the 'worship' of the bear, the Yezo bear being one of the finest of his species. But it is impossible to understand the feelings by which it is prompted, for they worship it after their fashion, and set up its head in their villages, yet they trap it, kill it, eat it, and sell its skin. There is no doubt that this wild beast inspires more of the feeling which prompts worship than the inanimate forces of nature, and the Ainos may be distinguished as bear-worshippers, and their greatest religious festival, or Saturnalia, as the Festival of the Bear. Gentle and peaceful as they are, they have a great admiration for fierceness and courage, and the bear, which is the strongest, fiercest, and most courageous animal known to them, has probably in all ages inspired them with

veneration. Some of their rude chants are in praise of the bear, and their highest eulogy on a man is to compare him to a bear." * Like the Golds, the Giliaks keep eagles in cages, giving them the same food as the bears. But they do not hunt the wolf, to which they ascribe baneful influences.

Golds and Giliaks, Oroches and Manegrs, are all alike destined to disappear before the Russians. No doubt colonisation, properly so called, is proceeding very slowly, and many settlements, unfavourably placed in the neighbourhood of marshes or thickets too difficult to be cleared, have had to be abandoned. Nevertheless the military posts, fishing stations, and provision depôts afford solid rallying-points to the Slav populations. The seaports and reclaimed lands are so many "New Russias," which are inch by inch absorbing all the surrounding region. The prairies of the Amur and the southern districts watered by the Usuri are amongst the countries where the Russian element is increasing and flourishing, while the Cossacks, stationed on the Lower Usuri in colonies at intervals of from 15 to 20 miles, have fallen into the most abject poverty. They have neither corn nor cattle, and in 1867 every "soul" had less than an acre of land under cultivation. Some Finnish families, which had received grants of lands from the Government on the Upper Usuri, have been obliged to abandon them and take refuge in Vladivostok. A few Bohemians had also offered to colonise the Usuri valley and the Manchurian maritime districts, but on condition of enjoying free municipal institutions. However, the Russian Government rejected these offers as too dangerous, and, speaking generally, the colonies of the Amur basin must so far be pronounced a failure. In order at any cost to occupy the whole "line" from Transbaikalia to Vladivostok in two years, military posts had been founded at regular intervals, but all the sites thus chosen did not prove suitable for agricultural settlements. As a rule, the colonies flourish in proportion as they are more freely developed and removed from the meddlesome interference of the authorities. A large number of the Russian villages in the Amur basin have been named after the travellers who have distinguished themselves by their explorations in Siberia.

The Kamenshiki.

Recently, also, some of the "Old Believers" have found their way from the Altaï highlands to the Amur basin. An interesting account of these little-known Siberian "Kamenshiki" has been communicated by M. Printz to Mr. E. D. Morgan, and by him published in his English edition of Prjevalsky's "Journey to the Lob-Nor." After the year 1747, when the Government took over from Demidoff the Altaï mines, many new settlements were founded in the mountains, and a chain of forts was erected to protect the works from the inroads of the Zungarian Kalmuks. But many of the miners and settlers from various quarters soon crossed the frontier, so that in 1764 a second line had to be formed towards the south-east. In order to secure themselves from the Tatars and Kalmuks the new settlers founded their first stations in the impenetrable forests of Kuznetsk, where the Old Believers made for

* "Unbeaten Tracts in Japan," ii. p. 73.

themselves caves (*skiti*) and hermitages, which later on became villages, subject to taxation and liable to furnish hands for the mines. To escape from these exactions the settlers again moved farther towards the Chinese frontier, where they were joined by others who belonged to no particular sect, but were mostly runaway miners and others anxious to avoid labour and taxation.

To this day there are ravines in the Altaï called "Kamen" (rock), and their inhabitants are spoken of as living "in the rock," or "beyond the rock," whence their name of *Kamenshiki*, or "Rock People." The first Kamenshiki lived for a time in the secluded Bukhtarma hills, where their holiness and humility, real or feigned, soon began to attract the other inhabitants towards them. Many of the serfs were also induced to join them, obtaining leave to go on hunting expeditions, and then staying away altogether. They lived peaceably together, observing strictly the rites of their religion, tilling the land, and enriching themselves by the sale of costly furs. In the hunting districts they passed the winter in rude huts, occupied exclusively in trapping fur-bearing animals. The huts were often completely buried in snow-drifts several yards deep, with a small opening for the entrance. The only signs of life in these snowy wastes and dense forests were the stack of fire-wood, the black bath, and the *sa ra*, or larder, supported on four trees, and about 15 feet from the ground. They also visited the Narim, a tributary of the Irtish, where they caught the sturgeon and sterlet, which they dried or jerked in the sun.

The Government, although aware of the colony of "outlaws" in the Bukhtarma district, was unable to take effectual measures against them, owing to the inaccessible nature of the country. But in 1791 they voluntarily submitted and received the imperial pardon, and were then made liable to a small poll-tax, changed later on to a tribute in kind. In the early stage of their existence their lives were patriarchal in the extreme, and being cut off from the world, and united by a common lot, they formed a religious brotherhood, living together in peace and harmony. Disputes were referred to the "Best Men," those who possessed the general confidence, and were distinguished for their moral qualities. But after they were joined by outcasts and runaways of all sorts, every kind of unbridled license broke out amongst them. Robbery, rape, and murder became rife, and the preponderance of the men over the other sex led to much discord and vice. Some of their number, caught red-handed, were condemned in 1788 to an extraordinary punishment: two of the criminals were bound to small rafts and set adrift in the rapid Bukhtarma River, each with a pole to save himself from drowning, and a loaf of bread for food. One was drowned, and the other washed to the bank and pardoned.

After their submission to the authorities in 1791 they abandoned their "rocks," and removed to places suited for tillage, stock-breeding, and industrial pursuits. When visited in 1863 by Printz, they were a thriving community, with numerous herds and flocks, and much land under tillage. They are daring hunters, and have been known single-handed to attack and dispatch the bear, armed only with an axe. They claim to belong to the old priestless sect—hence have no "popes" of their own. Nothing but necessity drives them to the Orthodox Church before marriage, when they are obliged to sign a written engagement never to

return to the "raskol." This, however, they do not observe, on the ground that it was obtained on compulsion, nor do they ever bring their children to be baptized, or comply with any of the observances of the orthodox faith.

The volost, a district of Bukhtarma, has a present population of 1,438, living in eight villages in an extremely fertile district. In 1865 a party of sixty left the community in search of the "promised land" of which their traditions speak. But after two years of fruitless wanderings on the Russo-Chinese border nearly all returned to their homes. Since then another party was met by Prjevalsky on the desolate shores of Lob-nor, and others are now migrating to the more inviting region of the Amur basin.

Topography.

The few Russian towns scattered over the country of the Tunguses and Giliaks on the coast of the Sea of Okhotsk, Gulf of Tatary, and Sea of Japan are still in their infancy. Scarcely more than two or three of them would be regarded as anything more than simple villages, were they suddenly transported to the populous regions of European Russia. Still they derive a certain historic importance from their very position as the advanced outposts of the empire on the Pacific seaboard over against the New World.

The town of *Okhotsk*, which gives its name to the great land-locked Sea of Okhotsk, has never had more than a few hundred inhabitants. Yet its inconvenient harbour, situated on a lagoon at the junction of the Okhota and Kukhtuya, enjoys a certain amount of trade. Previous to the year 1807, when a ship was sent directly from Russia round the Cape of Good Hope to Okhotsk, all the provisions and other supplies for the Russian fleet in the Pacific had to be forwarded overland from Yakutsk. The Government and the trading company of Russian America employed every year 13,000 horses in this carrying trade over the Aldan Mountains. In 1844 the "American" fishing and peltry company removed its factories and docks from Okhotsk to the port of *Ayan*, more favourably situated on the same coast, and 3° farther south, in a less severe, though not a less humid and boisterous climate. *Udskoy Ostrog*, one of the oldest Cossack stations in this region, and situated near the south-west corner of the Sea of Okhotsk, also ranks as a town, though consisting only of a few dozen houses. Other so-called "towns" are *Gijiga*, or *Gijiginsk*, and *Penjina*, or *Penjinsk*, mere groups of huts, standing at the northern extremity of the Sea of Okhotsk, each on one of the inlets terminating this inland sea.

The Russian towns of the Amur basin, although founded long after Okhotsk, have nevertheless outstripped the ancient city, which at one time enjoyed a monopoly of the Russian trade on the Pacific. *Chita*, capital of Transbaikalia, has the administrative importance imparted to it by its rank and position as a central station on the route between Lake Baikal and the Amur. But the Ingoda, which below Chita plunges into a deep gorge, is navigable only during the spring floods, when it sends down the flotilla of boats laden with corn, salt, preserved meat, and manufactured goods for all the settlements in the Amur basin as far as Niko-

PORT OF AYAN, SEA OF OKHOTSK.

layevsk. The boats used in this service are built in the vast forests stretching along the river above Chita. *Nyerchinsk* no longer stands on the banks of a navigable river, the inundations of 1812 having caused it to be removed to the north of the Nyercha, over 2 miles from the Shilka, which, though formed by the junction of the Onon and Ingoda, is accessible only to light craft. The true head of the navigation is some 90 miles farther down at *Stretensk*, a flourishing village which possesses some warehouses and workshops. Here most of the Russian boats on the Amur put up for the winter. Nyerchinsk is a trading-place, which has become the emporium for the whole region, whose future prosperity and importance are insured by its numerous argentiferous lead, quicksilver, copper, iron, tin, and zinc mines, its gold-washings, precious stones, coal-fields, and mineral waters. Historically the name of Nyerchinsk recalls the treaty that was here concluded in 1689 between Russia and China to the advantage of the latter power. It also recalls the sufferings of the numerous political exiles condemned to work in the neighbouring mines. The chief penal settlement of the district is situated at the gold-washings of *Kara*, on the Shilka, some 60 miles below Stretensk. Over 2,000 persons, including a certain number of political convicts, are here condemned to hard labour. These gold-washings, like all those of the Argun and Shilka valleys, are often known by the name of *Nyerchinskiye Priiski*,* and the term Nyerchinsk is also current in the meteorological works of *Nyerchinskiy Zavod*, a silver foundry, situated 175 miles east of the town on a small affluent of the Argun. Here were made the important observations which have supplied the principal data for the study of the climate of East Siberia. It is a pleasant little place, surrounded by metallurgic establishments.

Since the first incursions of the Russians the banks of the Amur already boast of their ruined cities. Such is *Albazin*, founded in 1651 by the Cossack chief Khabarov, and which the Chinese armies had to besiege and capture three times before the Russians finally ceded it in the treaty of Nyerchinsk. A modern stanitza has sprung up at the foot of the ruined fortress, which is now overgrown with trees and shrubs. The present capital of the reconquered Russian territory on the Middle Amur is *Blagoryeshchensk*, which was founded in 1856 on the peninsular terrace formed by the junction of the Amur and Zyeya, 18 miles above the confluence. The brand-new Russian town, with its governor's palace, broad streets, low red-roofed houses, all built by the soldiers on one plan, contrasts unfavourably with the populous Chinese town of Aïgûn, lying on the banks of the river some 20 miles farther down. But it does a brisk trade with Manchuria, which even in 1869 was already estimated at nearly 500,000 roubles yearly. Even within the Russian frontier there reside over 10,000 Chinese subjects, who pay their taxes to the officials on the right bank. The Blagovyeshchensk district is destined to become the future granary of the Amur region. Most of the Slav squatters, belonging to the sect of the *Dukhabortzi*, or "Spiritual Wrestlers," are free colonists, having selected the sites of their villages on the Zyeya and Zavitaya

* Yield of gold in the Amur basin in 1878, 2,075,000 roubles; hands employed, 39,250, of whom 1,935 escaped.

without the intervention of the military authorities. First came the young men in

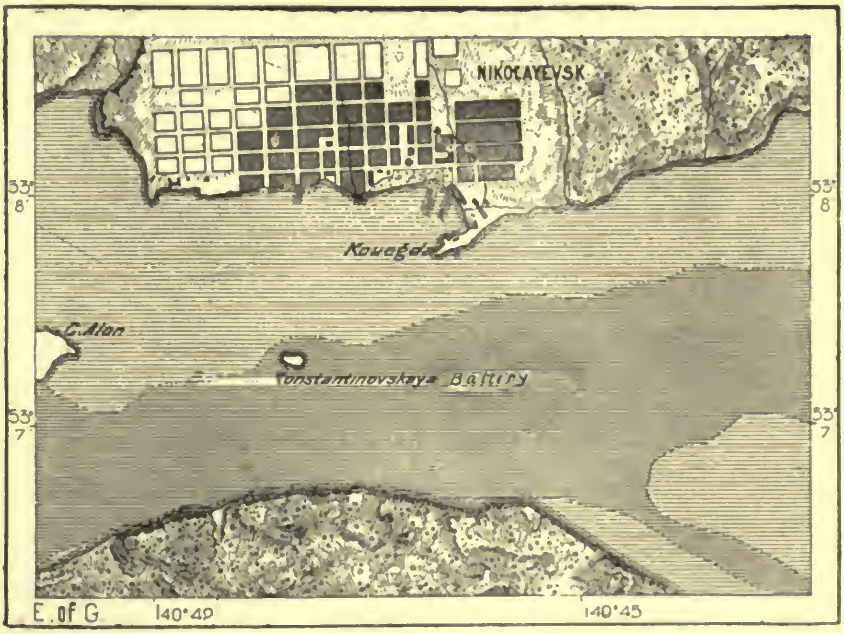
Fig. 219.—Blagovyeshchensk, on the Amur.

the spring, provided with supplies, and accompanied with their horses, which they bartered with the Manchus for working oxen. On the arrival of the families a

few months later on, the cabins were already built, and long yokes of eighteen or twenty cattle had already cleared the thickets of dwarf oaks. These villages are now flourishing, and with their cheerful aspect present a striking contrast to the wretched settlements established by order of the authorities in the midst of scrub, rocks, and swamps. One of the most thriving colonies is that of *Mikhaïlo-Semyonovsk*, situated at the issue of the gorge of the Bureya River.

The present capital of all the Lower Amur region and of the maritime province is *Khabarovka*, thus named in honour of the daring Cossack who first descended the Amur nearly to its mouth. Built on the steep side of a hill overlooking the right bank of the Amur at its confluence with the Usuri, Khabarovka consisted till

Fig. 220.—Nikolayevsk.
Scale 1 : 62,000.



0 to 32 Feet. 32 Feet and upwards.
2,160 Yards.

recently of little more than a few barracks and stores. But its happy position at the diverging point of the three great waterways of the Middle and Lower Amur and Usuri, and under one of the least rigorous climates in Siberia, seems to insure for this place a prosperous commercial future. About 20,000 sable skins are annually brought to this market. But the surrounding marshes and woodlands present great obstacles to the progress of agriculture.

Of all the Russian colonies in Siberia those of the Lower Amur are the most backward. Some of them have even had to be abandoned, the hopes of the Slav peasantry having been completely baffled by the rainy climate, thankless soil, swampy lowlands, and rocky or wooded slopes. *Sofiisk* and *Mariinsk* derive some

importance from their position on the Amur, at the entrance of the depression leading to the Gulf of Castries. *Nikolayevsk*, the old Cherbakh of the Giliaks, does some trade during the fine season as the port of entry to the river. Some American dealers are settled here, but most of the population consists of soldiers and officials. Even the free townsfolk consider themselves as exiles, and few of them settle here permanently. The women are in a large minority in this log-hut settlement. The

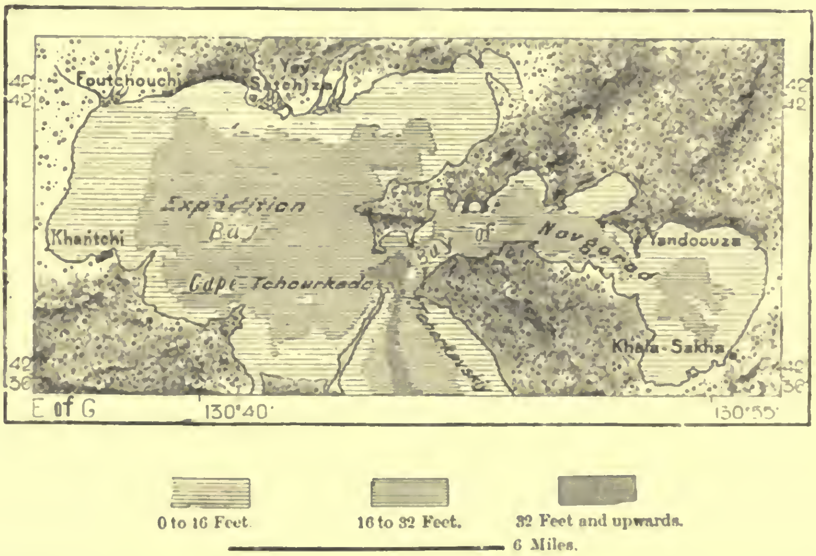
Fig. 221.—America Bay.
Scale 1 : 180,000.

difficulties presented by the bar and inconvenient roadstead, the five months' block during the winter season, and the absolute interruption of all relations with the rest of the world even in spring and autumn, prevent Nikolayevsk from benefiting by its advantages as the port of entry of the great East Siberian river. Its wretched climate also renders it one of the most uninviting places of residence on the globe. The sun shines for months together behind the clouds; the air is

constantly charged with drizzling mists, accompanied by dense fogs, and in winter fierce snow-storms almost completely interrupt all communication from house to house. Owing to these causes Nikolayevsk has fallen into decay, and the capital has been removed to Khabarovka.

The ports on the Manchurian seaboard have benefited by the disadvantages of Nikolayevsk, and many emigrants from the Lower Amur have settled in *Port Imperial*, *Vladimir*, and *Olga*, in the ports on the Gulf of Peter the Great, and especially in *Vladivostok*, to which the military establishments of Nikolayevsk have been removed. The very name of Vladivostok, which means "Ruler of the East," and which recalls Vladikavkaz, "Ruler of the Caucasus," at the other extremity of Asia, betrays the future aspirations of those who founded this station in 1860. The strait connecting the Gulf of the Amur with that of the Usuri has been named

Fig. 222.—The Possiet Inlets.
Scale 1 : 300,000.



the "Eastern Bosporus," and the harbour, which forms a semicircular inlet at the extremity of the Muraviov Amurskiy peninsula, bears the title of the "Golden Horn." Vladivostok is thus intended to become a second Constantinople. But whether such aspirations be realised or not, it is beyond doubt already the chief city of all Asiatic Russia east of Yakutsk, and must maintain this position until the Russians shall have occupied other ports in more southern latitudes. The idea has also been entertained of making it a winter station for the foreign merchants from Shang-hae and Ning-po. In 1880 the strained relations with China rendered it for a time the most animated naval station in the extreme east, and, thanks to its armaments, Russia found herself for the first time more powerful than Great Britain in the Chinese and Japanese waters. But the importance of Vladivostok is far more of a military than a commercial character, and the outlay for all the great works undertaken on the shores of the "Golden Horn"—piers, docks, arsenals—

has been defrayed, not by private enterprise, but by the imperial exchequer. Half of the population is composed of soldiers, officials, liberated convicts, and the other half of Mandzi, Chinese, and Coreans, whose junks, wooden houses, sheds, and other surroundings impart a very different aspect to the place from that of most Slav cities. The free Russian element is scarcely represented except by a few artisans, and very few women are met in the streets. Vladivostok is still little more than an encampment, in which the normal family life is the exception. Its small export trade in hartshorn, trepang, mushrooms, and other fungi used in tanning, is entirely monopolized by the Chinese, and amounted in 1879 to little over 104,000 roubles. Some of the ports on the Manchu coast, especially those of America Bay and of the Possiet Sounds east and west, might easily develop a greater commercial activity. The latter exported in 1866 as much as 400,000 roubles' worth of sea-cabbages alone. Vladivostok is still unconnected by any good highways of communication with the inland districts. In summer all the traffic with the Usuri valley is carried on by the Bay of the Amur and the Suïfun waterway, which is navigable for small steamers for a distance of over 30 miles. But in winter the "Bosporus" is blocked with ice, although the waters of the gulf itself remain open throughout the year. Vladivostok promises one day to become the Pacific terminus of the great trunk line across the eastern hemisphere, as it has long been that of the "Danish" telegraphic system, whose central point is in Copenhagen, and whose ramifications already stretch over half the globe.

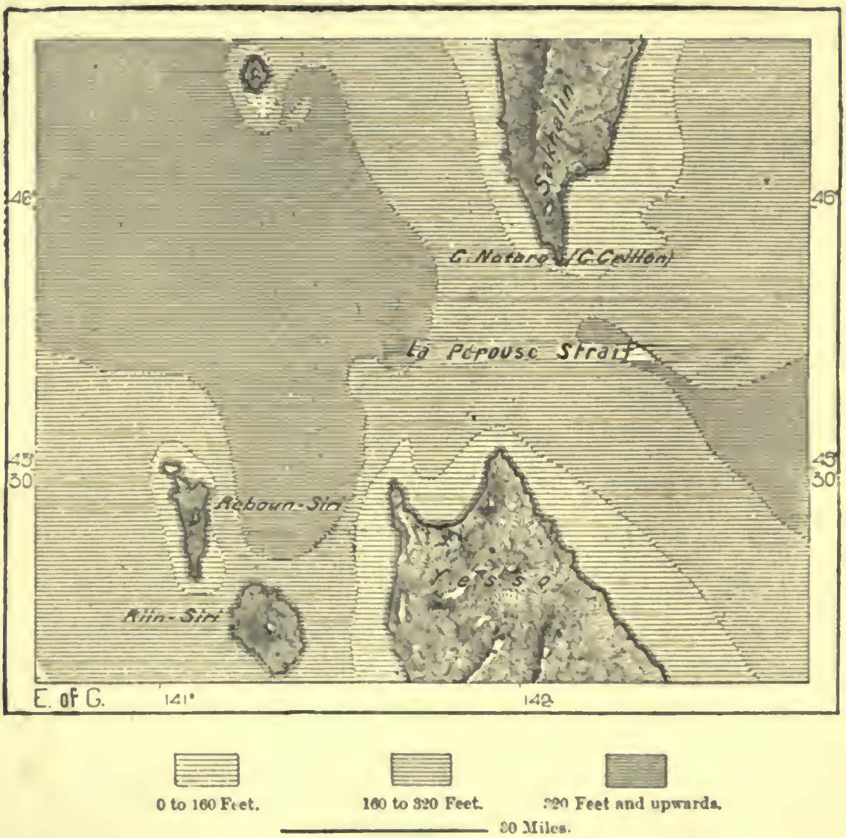
A writer in a recent number of the *North China Herald* recommends Vladivostok as a sort of sanitarium or summer retreat for English residents in China. He states that the summer temperature is about 65° Fahr., with invigorating mountain breezes, splendid scenery, and extensive oak, beech, and pine forests in the district. From Nagasaki, in Japan, the route lies along the Japanese coast, close to the lovely islands of Hirado, Ikutski, and Iki. From Iki it runs about 230 miles east of Tsu-shima to Dagelet in the full strength of the Kuro-sivo oceanic current. Dagelet is a picturesque island, wooded to the very summit of its highest peak, 4,000 feet above sea-level. From Dagelet the course is due north for 340 miles to the island of Skryplef, within 6 miles of Vladivostok. The soil of this part of Russian Manchuria he describes as extremely productive, with abundance of the very finest forest trees, besides gold, iron, coal, and other minerals. The surrounding waters also teem with fish, while the reefs are covered with edible seaweed. Between Arkold and St. Vladimir Bay there are several fairly good harbours, some of them quite sheltered. The climate is healthy and bracing, but too severe for a winter residence.

VIII.—SAKHALIN.

This island, although one of the largest in the world, with an area of about 25,000 square miles, has remained almost unknown to Europeans till within the last hundred years. The Dutch navigator, Martin Gerrits, of Vries, had coasted its eastern seaboard in 1645, and cast anchor in the Gulf of Patience; but he

supposed that he was following the coast-line of the Japanese land of Yezo. Even on Cook's chart, published in London in 1784, Sakhalin figures merely as a small island near the Gulf of the Amur. Buache alone had succeeded in tracing its northern outlines with some approach to accuracy, but even he attributed more than half of the whole island to Yezo. The very name of Sakhalin betrays the ignorance till quite recently prevailing in regard of this *terra incognita*. It is a contracted form of the Manchu term, Sakhalan anda Kanda, or "Rock of the Amur Estuary," applied originally to an islet at the mouth of this river, and not to the extensive

Fig. 223.—La Pérouse Strait.
Scale 1 : 1,600,000.



insular region stretching along the Manchu seaboard for a distance of 570 miles north and south. The Japanese and Ainos of the Kurile Archipelago gave, and still give, to this island the name of Krafto, Karaftu, or Karafutu, which it ought to have retained. Mamia Rinzo simply calls it Kita Yezo, or "North Yezo," while such terms as Tarakai, Choca, and Sisam seem to refer only to portions of the land, or to its inhabitants.

So far back as 1787, La Pérouse, while navigating the strait bearing his name and separating Yezo from Sakhalin, had penetrated into the Gulf of Tatary and surveyed all the coasts of island and mainland as far as the Bay of Castries. But

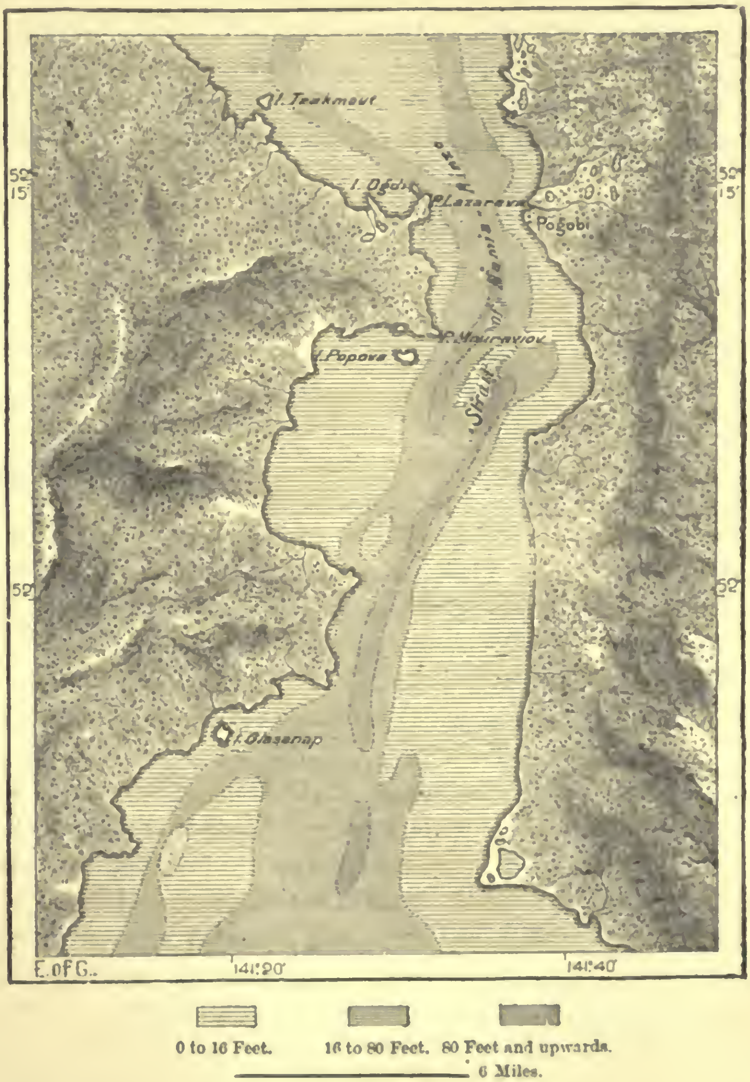
although Sakhalin seemed to be obviously an island, the reports of the natives

Fig. 224.—Sakhalin: Cape La Jonquière.

regarding a portage, over which they carried their sleighs, referred, according to some geographers, to an isthmus connecting Sakhalin with the continent. For at

that time the existence was still unknown of the Kizi bank, lying between the Amur and Gulf of Castries. These reports might also, perhaps, have referred to the bridge of ice by which Sakhalin is every year connected with the mainland. In 1797 Broughton, after visiting the west coast, and in 1805 Krusenstern, after doubling the northern extremity of the island, still supposed that it might be

Fig. 225.—Mamia Rinzo Strait.
Scale 1 : 300,000.



joined to the continent by a sand-bank. Till about the middle of the present century most of the European charts represented Sakhalin as a peninsula, although the Japanese pilot, Mamia Rinzo, had already, a few years after the voyage of Krusenstern, explored the Gulf of Tatary, and penetrated by this route into the Amur estuary. At last the hydrographic labours of Nevelskoi during the years 1849—52 revealed the correct outlines of the shores of Sakhalin and the Mamia

Rinzo Strait. Vessels drawing 16 feet of water have room to tack about between the sand-banks in these waters. At the same time this passage is completely ice-bound for four months in the year, and it is obstructed by floes till the month of June.

Since 1875 the whole island has belonged to Russia as far as La Pérouse Strait, the southern portion having been ceded by Japan to that power in exchange for the Kurile Archipelago. But its thorough survey had already been commenced by Voshnyak, Orlov, Rudanovskiy, Schrenck, Schmidt, Glehn, Brilkin, and others, who carefully explored its shores, and studied its relief, climate, inhabitants, mines, and harbours. Russian geographical terms are already supplanting the native Aino and Giliak names, and several French appellations given by La Pérouse to capes, islands, bays, and coast ranges have been either distorted or forgotten.

Highlands.

In its relief Sakhalin resembles the mainland of Manchuria. Were the land suddenly to subside a few hundred yards, the Sikhota-alin chain would also become an insular region, with a crest running across several parallels of latitude. On the other hand, were the bed of the sea to be upheaved, Sakhalin would be converted into a long escarpment of the continent. Its hills and mountains, which seem on the whole to be of more recent formation than those of the mainland, are disposed in long ridges running parallel with the meridian. The western chain, which skirts the whole coast from north to south, and which is by far the most elevated, rises here and there to heights of from 3,000 to nearly 5,000 feet. But in some places it sinks as low as 580 feet, and is here crossed without the slightest difficulty. East of this main range, consisting of cretaceous and tertiary rocks, there stretch other parallel chains, or fragments of chains, with a mean elevation of scarcely more than 640 feet, and with gently-rounded crests, few of which deserve the name of mountain. The Tiara alone, culminating point of the eastern ridge, which terminates in a long peninsula east of the Gulf of Patience, is an imposing peak, comparable to those of the western range. The Sakhalin Mountains nowhere reach the snow-line, but several rise above the limits of vegetation, blending their bare greyish crags with the watery clouds of those latitudes.*

The chains running north and south are separated by intervening plains or valleys disposed in the same direction, and watered by streams flowing either northwards or southwards. Thus the Poronai, or Plii, the great river of Sakhalin, after winding through a broad plain at the foot of the western range, falls into the Gulf of Patience, and in the same depression rise the head-streams of the river

* Chief elevations of the Sakhalin Mountains, according to Schmidt and Glehn :—

	Feet.
Mean height of the west coast range (Schmidt)	2,920
La Martinière or Klönspal Peak, centre of the range (Glehn)	4,865
Bernizet, south end of the island (Glehn)	3,890
Arkai-pal, east of Duï (Glehn)	680
Tiara, east range (Glehn)	1,940
Pass between Kusunai and Manûe	730

Tîm, which runs northwards to the Sea of Okhotsk. In these intervening depressions are also found the lakes and the regular curves of the gulfs and bays, which are limited right and left by the headlands of the ranges running north and south. As on the shores of Lake Khanka, the constant action of the surf under the influence of the prevailing south winds has perceptibly modified the coast of Sakhalin. Thus the sandy beach forming a perfect crescent round the Gulf of Patience has separated from the sea several lakes and marshes which recall the previous outlines of the coast, and in which are discharged the waters of the Poronai. The formation of the coast-line has probably been facilitated by the upheaval of the land, for quantities of marine remains have been found in places which are at present from 8 to 10 feet above the level of the sea.

Fig. 226.—Sakhalin.

Scale 1 : 1,750,000.

120 Miles.

Climate, Fauna, Flora.

From its position Sakhalin naturally partakes of the East Siberian climate. Broken masses of ice have been known to remain heaped up round the eastern headlands till the month of July, and during the month of April sleighs are still able to make their way along the shores of the Gulf of Patience. Here the thermometer often remains 66° below freezing point in January, whereas on the west coast, which is well sheltered by the neighbouring range running north and south, the temperature is fully 20° warmer. But whatever be its relative advantages, even on this coast the climate is very severe. Although the southern extremity of the island lies under the 46th parallel of latitude, or about the same distance from the pole as the Lombard towns nestling at the foot of the Alps, its temperature is about the same as that of Archangel or Haparanda, at the head of the Baltic. The station of Kusunai, situated in 48° N. lat., on the Gulf of Tatary, is crossed, according to Dobrotvorskiy, by the isothermal of 2° 23. In other words, its mean temperature is lower than that of the Norwegian town of

Tromsö, which lies some 22° nearer to the pole. In July, the warmest month in the year, the mean temperature of Kusunai is only from 60° to 62° Fahr., and in the hottest seasons the glass never rises beyond 77° Fahr. Even the shores of Aniva Bay, notwithstanding their sunny aspect, have a very severe climate, owing to the northern winds, which sweep through the broad depressions between the mountain ranges. The disagreeable character of the climatic conditions is intensified by the extreme humidity, fogs, rains, and snows of these northern skies. At Kusunai, which enjoys an exceptionally favourable position, thanks to the continental winds,

Fig. 227.—Aino Girl.

by which its atmosphere is frequently cleared of clouds, the rainy or foggy days average 253, so that fine weather does not prevail for a third of a year. On the east coast the proportion of bright days is far less considerable. Throughout its vast empire, where the St. Petersburg Government has discovered so many dreary places of exile, there are scarcely any more terrible than those of Sakhalin, exposed as they are to icy rains and raging snow-storms for a great part of the year.

The flora of this Siberian island naturally resembles that of the Manchurian coast lands, from which it is separated only by the narrow Mamia Rinzo Channel. Most of the extensive forests covering the mountain slopes belong to the Siberian

and Manchurian flora. But some species have also found their way into the island from the Japanese Archipelago, and there even occurs a sort of bamboo (*Arundinaria Kurilensis*) covering whole mountains, and growing to man's height on the uplands side by side with the dwarf birch of Kamchatka. Some American species are also intermingled with the Asiatic vegetation of the island, and according to Schmidt, Sakhalin formed part of the New World during the miocene epoch. Thus it is that plants from the most opposite portions of the globe become associated together in masses of a strikingly original vegetation. Of seven hundred flowering species scarcely twenty are peculiar to the island. The forest trees and under-growths, which flourish at the foot of the hills, form a continuation of those of the mainland. Higher up, the vegetable zone, as far as 1,500 or 1,600 feet, consists mainly of conifers, while a third and still more elevated zone is chiefly composed of birches and willows, beyond which comes a dense growth of trailing species of an almost blackish hue, and reaching nearly to the summit.

The animals frequenting these woodlands are the same as on the neighbouring mainland. On both sides of the strait the bear, wild reindeer, and sable are hunted, and the tiger often visits the northern extremity of the island, which he reaches across the ice-bound Mamia Rinzo Strait in winter. But he has never been seen in the southern districts, and before the arrival of the Russians the Ainos are said not to have known him even by name.

INHABITANTS—THE AINOS AND OROKS.

The population of Sakhalin, estimated altogether at scarcely more than 15,000 souls, or considerably less than 1 to 2 square miles, consists exclusively of immigrants from the continent and neighbouring islands. The Giliaks, who occupy all the northern districts to the number of about 2,000, in no way differ from their kinsmen of the Lower Amur. The Oroks of the east coast are Tunguses of the same stock as the Orochons and Manguns of the Amur, and call themselves by the same name of Olcha. The Ainos, a bearded and gentle race, who are supposed to have been the aborigines of the Kurile and Japanese Archipelago, are now restricted to the southern districts of Sakhalin. But the Aino geographical terms occurring even in the extreme north show that this race formerly occupied a much wider range. They have been driven south by the Giliaks and Oroks, and since the middle of the present century some of their villages have been completely wasted by small-pox. The slavery to which all the Ainos have been reduced by the Japanese fishers has also contributed to diminish their numbers as well as to increase their moral debasement.

The civilised element is represented by the Japanese and Russians. The former are engaged chiefly in the fishing industry, and have founded settlements and factories at intervals along the coast, where few are met except as temporary immigrants unaccompanied by their families. The Russians, whether military officials, police, or exiles, have all arrived against their will in this inhospitable land of rains, snows, and fogs, where they have to be supported by the Government, the resources of the

island being totally insufficient for their wants. The Ainos and Giliaks are able

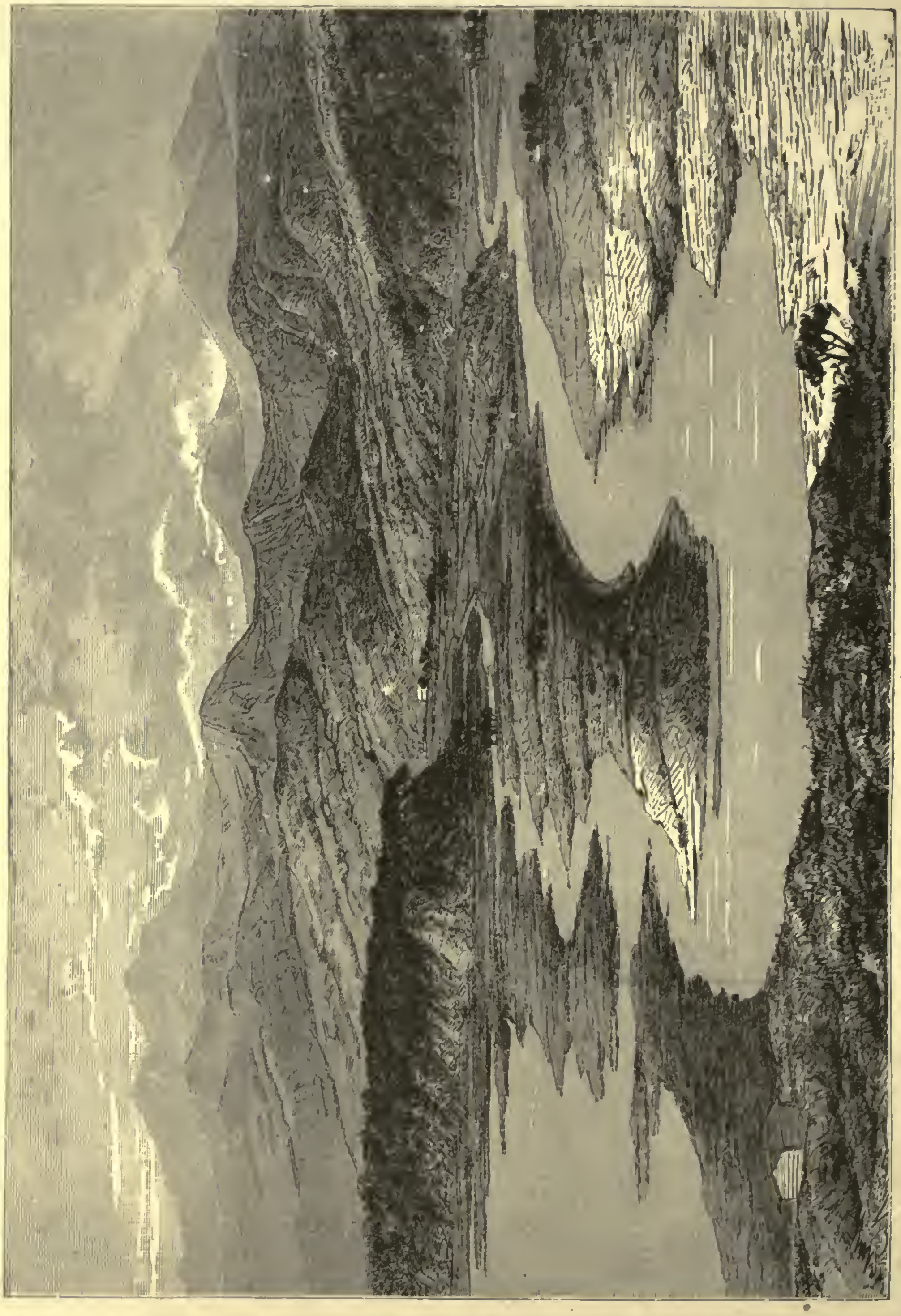
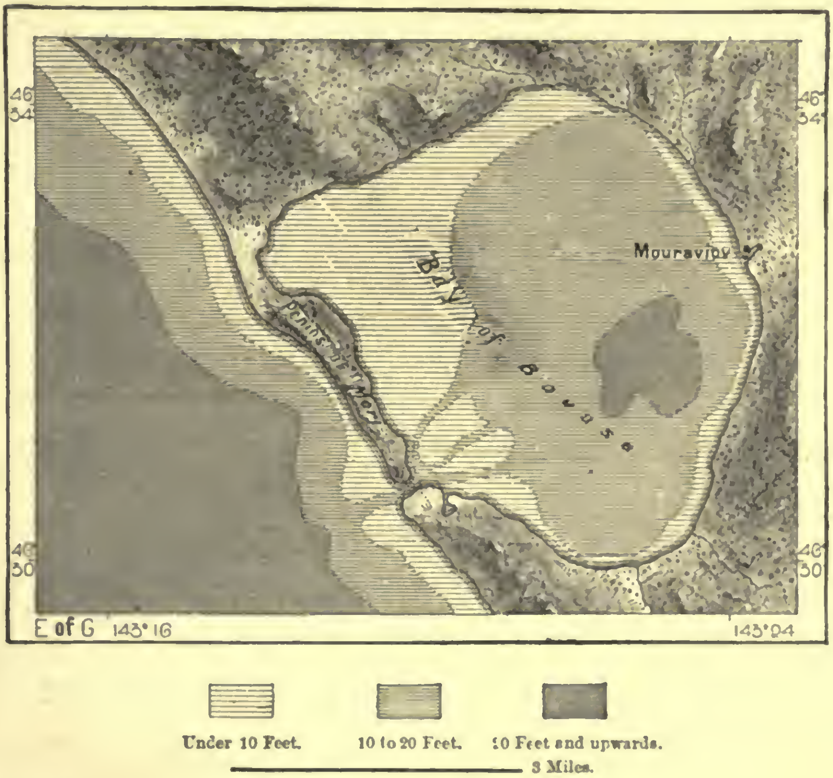


Fig. 228.—Sakhalin: The Dui Valley.

to live on the produce of their fisheries, but the Russians need many other things to render existence possible, especially in such a dismal region as this. In any

case even the marine animals have greatly diminished in these waters, and Seal Island, a vast bank in the south-east of the Gulf of Patience, is no longer covered, as formerly, by multitudes of cetacea, thousands of which fell a prey to a few seal-hunters on every expedition. The cultivation of cereals and vegetables and stock-breeding has not yet made much progress, nor is it likely ever to succeed except in a few of the more sheltered valleys. Hence the flour required by the inhabitants has still to be brought from the mainland, and even from Russia itself. No doubt Sakhalin possesses considerable latent resources in its numerous coal-fields, which are being constantly more and more developed by the Russian convicts, and which

Fig. 229.—Port of Muraviov.
Scale 1 : 125,000.



are highly appreciated by seafarers in the Pacific. But this coal costs more than that of Japan and Australia, and the yearly output does not even yet suffice for the local demand. The mortality of the immigrants greatly exceeds the birth rate, and Sakhalin, which has not yet been constituted a colony, remains for the Russians a mere prison or place of banishment.

Topography.

The Russian stations are all situated on the coast. *Duï*, near La Jonquière Bay, about the middle of the west side, is the most important village. Its quarries and coal mines, the first opened in the island, employ 2,000 convicts, hired out by the

Government to the owners at the rate of from 1s. to 2s. 6d. a day. The harbour of this convict station is formed by a gentle curve in the land, with a bold cape at each extremity; and the shore is lined by lofty cliffs of ironstone and limestone, with seams of coal at an angle of about 30°. *Kusunai* and *Manue* have the advantage of being connected together by the route which crosses the island at its narrowest point, and this circumstance greatly facilitates their exchanges. Farther south some 700 Chinese, under the control of a few Japanese, are engaged in the *Mauka* Cove, on the east coast, in the trepang and sea-cabbage fisheries.

Some interesting information regarding Mauka Cove, on the east coast, has been recently communicated to the British Hydrographic Office by Captain Anderson, of the steamer *Appin*. Mauka Cove (47° 3′ N., 142° 6′ E.) is the head-quarters of a company, which has acquired from the Russian Government the right to collect along the sea-coast seaweed, bêche de mer, fish, &c., for a term of ten years. The cove is about two cables in length, east and west, and has the reputation of affording the safest anchorage in this part of the island. The population consists of 3 Europeans, a small guard of 7 Russian soldiers, and about 700 coolies, chiefly Ainos, Coreans, and Chinese. The Ainos are said to be excellent hunters, and a quiet, good-natured, hardy race. Although cold, the climate is very fine, the summer temperature not exceeding 60° Fahr., and falling in winter at times to 24° below zero. Fine weather prevails from May to the autumn equinox: when the storms set in, June and July are very foggy months, with occasional east and south-east winds, which bring rain from the uplands. But even then there is often a clear zone along the coast free from fogs, extending 4 or 5 miles off shore. There is an abundance of fine timber in the valleys—yellow pine, cedar, spruce, ash, oak. Coal crops out about a mile inland from the cove, and there are also evident indications of the presence of iron. Bears, hares, grouse, and in winter sables and fine-furred foxes are numerous, and the herring, cod, salmon, trout, and flounders abound on the coast. Communication with the east side of the island is maintained by means of dog-sledges, which the Ainos are expert in driving. South of Mauka Cove there are about a dozen trading stations along the coast, each with its mountain stream and settlement of Coreans and Ainos, who are employed by the European traders.

On Aniva Bay, at the other side of the peninsula, are situated the barracks of *Korsakov*, military capital of the island. Here there is a garrison of about 500 men. *Muraviov*, another military station, facing the Japanese waters, lies near the same coast, on a lake which communicates by a narrow channel with Aniva Bay. Notwithstanding the difficulties of its bar, this post is perhaps the least inconvenient in the island. But along its entire coast-line of about 1,200 miles Sakhalin has not a single thoroughly sheltered harbour. Nevertheless this island promises to be a valuable acquisition to the Russians, owing to its abundant and varied resources, including excellent timber, coal, iron, seaweed, whales and seals, sables, and other fur-bearing animals. The soil also in some of the most favoured spots is extremely fertile, and capable of growing all the useful plants of the temperate zone.

IX.—MATERIAL CONDITION AND ADMINISTRATION OF SIBERIA.

For upwards of a hundred years the Russians have formed by far the most considerable element of the Siberian population. Those who claim to be Russians and are really Slavs, either by direct descent or by crossings and a gradual process of assimilation in manners or speech, represent altogether about seven-eighths of the inhabitants, and the proportion is rapidly increasing to their advantage not only by their natural expansion, but also by the disappearance or Russification of the native elements. Amongst the ruling people, of whom the Great Russians form the vast majority, the distinction of Russians proper, Lithuanians, Esthonians, Germans of the Baltic Provinces, and others have already almost entirely disappeared, so that they may be regarded as far more homogeneous even than the population of European Russia. Slavs of every branch except the Poles are all Russians alike in the eyes of Yakuts and Tunguses, as are also the Germans and Finns, most of whom now speak the language of the Muscovite.

The origin of the first Siberian immigrants is well known. The early traders were hunters, or *promishloniye*, from the Novgorod settlements in the north of Russia. Yermak was accompanied by Cossacks in his conquest of Sibir, but very few either of the traders or Cossacks brought their families with them, and when they settled in the country they generally married native women. The vast majority of the subsequent arrivals down to the middle of the nineteenth century were colonists against their will, either soldiers and officials or exiles, and of these the latter element was perhaps the most numerous. But the death rate was much higher amongst them than amongst the other inhabitants of the country, and most of them perished before they could become founders of families. Taking an average only of those returned by the official documents as exiles, or say from 8,000 to 9,000 a year, it is beyond doubt that more than 1,000,000 of human beings have been banished to Siberia during the last two hundred and fifty years, exclusive of those simply interned in this region.* With the exception of a few isolated, the first groups of free colonists were the peasantry who migrated to the Lower Amur immediately after the annexation of North Manchuria to the Russian Empire. No free immigration had been possible until the abolition of serfdom. The Crown and landowners kept their peasants for the cultivation of the land, only sending to Siberia the unfortunate wretches whom they wished to get rid of. At the same time, these exiles, ceasing to be serfs, soon acquired a greater degree of comfort than they ever knew in their native land.

Social Elements—The Exiles and Outlaws.

The North Asiatic regions were peopled by Russian settlers in the same way that the governments of Viatka, Perm, and Orenburg had been peopled. But to criminals, habitual vagrants, "loafers," and outcasts of every sort the Government here superadded schismatics and rebels. The hardships of the journey—epidemics, scurvy, the rigours of the climate, the horrors of bondage, and enforced domicile,

* Exiles from 1823 to 1858: Men, 238,182; women, 42,844; women and children following the heads of families, 23,285. Total, 304,618.

combined with a continual inquisitorial régime and the weariness of home sickness—sufficiently account for the excessive mortality of the exiles, while the small proportion of the women accompanying them prevents the rapid re-establishment of domestic circles. No doubt the Russian population of Siberia has been more than trebled during the last hundred years. But compared with certain other colonial settlements Asiatic Russia has been very slowly peopled during the three centuries which have elapsed since the conquest. If the returns can be trusted, some districts would even seem to have occasionally lost ground. Thus, while the government of Tomsk shows a yearly increase of over 20,000 by the natural excess of the birth

Fig. 230.—Density of the Siberian Population.

Scale 1 : 70,000,000.

rate, that of Irkutsk would appear to have had 12,000 less inhabitants in 1873 than twelve years previously, the numbers having fallen, according to the *Russische Revue*, from 370,455 in 1861 to 358,700 in 1873. In most of the towns the population would decrease were it not kept up by constant immigration, but in the rural districts there is a steady normal increase. It is evident that on the whole the expansion of the Slav element has largely compensated for the retrograde movement amongst the indigenous peoples, all of whom, except the Yakuts, have fallen off in many Siberian regions. The proportion of men is naturally greater than that of women, because Siberia is at once a land of exile and of immigration. Yet the disparity of the sexes is much less than in Australia and in the lands of the far

West, and at least in East Siberia males and females stand in the average proportion of 10 to 9.

The name of Siberia has become synonymous with a "land of exile." Each successive stage in the progress of Russian dominion in Asia has been marked by a line of penal settlements. At every fresh annexation transported convicts, dragging their chains through steppe and forest, carried to the extreme limits of the empire the proofs of the Czar's omnipotence. Under the shadow of every fortlet and convent erected in the vast Siberian domain there were opened dungeons for the reception of the exiled. At their very birth the colonies of Pelim, Beryozov, Selenginsk, and Albazin were already marked off as convict stations, and on the report of every fresh discovery at St. Petersburg, a gang of banished victims was immediately marched to the spot. The history of the land is inseparably associated with the mournful history of transportation.

The first decree of banishment struck the church bell of Uglich guilty of having summoned the people to arms at the time of the murder of Dimitri by Boris Gudonov in 1591. It was condemned to "lose its tongue and ear," like ordinary criminals, and to be transported to Pelim, whither it was soon followed by many citizens of the same place, and later on by everybody suspected by Boris. During the first century of Russian colonisation the exiles consisted almost exclusively of State prisoners. But towards the end of the seventeenth century the conquered Little Russians of Ukrania had to follow in the footsteps of the exiles from Great Russia. These Little Russians, having been sent away in numerous batches, have best preserved the customs of the mother country. Then the numbers were swollen by the unhappy Raskolnik dissenters, many of whom perished on the road of hardships, hunger, and torture, re-echoing the words of "Father" Avvakum in his memoirs, "The rafts are wearily stemmed against the current; the headmen are relentless, their sticks are heavy, their knouts cut the skin, and our food is the carrion rejected by the wolf!" "And must these sufferings last long?" asked the wife of the "pope," as she fell worn out with fatigue. "Unto death," gently answered Father Avvakum. "Be it so, father," she said, taking fresh courage. Amongst these Raskolniks of Siberia there were men whose first trial, on entering the community, was to endure the torture of burning coals in the ear.

The Stryeltzi, also dissenters, were banished by Peter the Great to mount guard in the remotest fortresses of the empire, as far as Okhotsk and Kamchatka. Their direct descendants are still met in the settlements along the banks of the Lena. After Peter's death the palace intrigues sent other unwilling exiles to Siberia—the Menshikovs, Dolgorukis, Birons, Münichs, Tolstoïs, Buturlins, and other great names. "Fare thee well, and if for ever, still for ever fare thee well," were words in their hearts, if not on their lips, for they knew that, like all doomed to Siberia, they would soon be forgotten. Some perished without leaving a trace behind them, and when a turn in fortune's wheel brought their friends back to power the wretched victims were sought for in vain amidst the forests and wastes of the tundra. Soïmonov, one of the few who were discovered, was immediately installed as Governor of Siberia.

In 1658 began the transportation of the Poles, but the wholesale banishments from this land date only from the time of Catherine II., with the confederates of Bar and the associates of Kosciuzko. Of the Poles who had taken service under Napoleon, nine hundred were sent to Siberia, and these were followed by numerous convoys, especially after the revolution of 1830, and the various insurrections which have taken place in Poland since that time.* These Polish exiles have taken a large share in the progress of the country. They have improved the management of the mines, created several local industries, taught horticulture, and developed family instruction.

The exiles whose memory awakens most sympathy amongst the Russians are the so-called "Dekabrists," or "Decembrists," who reached Siberia in 1826. At first they had much to suffer, but their condition was gradually improved, thanks to the self-sacrifice of the women, who resolved to share the lot of their husbands—thanks also to the influence of the Decembrists themselves, or their gaolers, and to the spirit of association which they developed. They were all grouped in a communal system organized in such a way that none could be reduced to want, and all alike were provided with books, periodicals, and some of the comforts of civilised existence. Their influence is even still felt in some of the towns of East Siberia. Since then other political victims have been added to the Siberian population; but none of them have aroused the same feelings of sympathy as did the Dekabrists. They move about on foot like the ordinary convicts, and, like them, work in the prisons, mines, and Government establishments. They are allowed neither to read, associate together, nor select the work most suited to their own taste.

Formerly the gangs of convicts, whether condemned by common law or for political causes, were joined together by a long iron bar, and in this way were obliged to traverse on foot the 3,500 miles that separate the Russian prisons from Transbaikalia. The journey generally lasted about two years. They are still marched from Tomsk to Chita on foot. On entering a village they intone, if permitted, the mournful chant, or rather long wail, of the *Misericordia* (*Miloserdnyaya*), and then the peasantry bring their offerings to the "unfortunates" (*nyeschastniye*), as the exiles are called by all the Siberians, who refuse to regard them as criminals. Even the *katorjniye*, or convicts condemned for crimes against society, are everywhere well received, and their reconciliation with the community is much facilitated by a certain feeling of esteem entertained for them, as for men of resolution. But the *poselenetz*, or ordinary petty thief, is usually regarded with contempt, so that in Russia it is almost better to be "hanged for a sheep than for a lamb." Attempts at escape might easily be made, but there is a traditional code of honour amongst the exiles, in accordance with which the attempt must not be made *en route*, lest their comrades suffer in their place. Even on the march they group themselves in communes and appoint their own starosta.

* In 1863 alone as many as 18,023 Poles were banished to Siberia.

The Siberian Russians—The Commune.

The Siberians, being recruited at once from the best and worst classes of Russian society, naturally present great contrasts in many respects to the inhabitants of the mother country. Their inherited qualities, developed under new conditions, necessarily tended to constitute them a special group in the great family of the Russian Slavs. Their natural intelligence, though seldom quickened by education, is perhaps even more acute than that of the European Russians. The pleasure of "interviewing" strangers has much to do with the welcome reception all receive in their izbas, which are generally both spacious and cleanly, and with better-furnished tables than many of those of the poverty-stricken Western Mujiks. Never having endured serfdom, except perhaps in the mines and factories, enjoying more room than Russian peasantry, and generally more exempt from official intermeddling of all sorts, the "Sibiryaks" have developed a keener sense of freedom. But although there is nothing cringing in their voice or manners, they lack the natural gentleness and genuine kindliness of the Western Slavs. They are, on the whole, inferior to the Russians proper in morals, no less than in natural disposition and industrial habits. Their great defect is apathy. Shrewd calculators, they yield neither to the impulses of religious zeal nor to political theories; hence scarcely any poets or musicians are found amongst them. They are inquisitive without taking the trouble to learn; they are fond of comfort, but shrink from the labour necessary to procure it; they call themselves the equals of all, but never dream of striking for freedom. Nevertheless, the example of the sublime acts of self-sacrifice with which the history of the Siberian exiles is full has not been lost, and, like the veins of gold in the crumbling rock, noble types are here and there revealed in the midst of the prevailing mediocrity. Should Siberia ever acquire any great importance in the civilised world, as may be expected from the natural resources of a large portion of her territory, she will not fail to make her influence felt in the cause of local self-government and political freedom.

As in European Russia, the bulk of the people are grouped in communes. The whole of the land, with the exception of a few properties conceded under special conditions, still belongs to the State, so that the communes enjoy its usufruct only. Thus in the government of Krasnoyarsk there is only one landed estate, whose privileges date from the reign of Catherine II. But properties are already being indirectly created by the concession of long leases of eighty years and upwards, as in England.

In Siberia as in Russia the *mir*, as a whole, is responsible to the Government for the taxes, and distributes the land according to the number of "souls"—that is, of able adults—who in their turn become bound to the commune for the family taxes. The Siberian mir is usually composed of several villages, each with its allotment of lands, answering more or less to the number of its inhabitants. Thus each "soul" has the use of about 14 acres, an extent of land which, if well cultivated, would amply suffice for the support of several families. But the prevailing system is ruinous to the land itself The Siberian peasant never manures his farm, when

exhausted simply allowing the soil to lie fallow. Hence he scarcely utilises more than a third of the land, and when he has raised three or four crops in succession in one place he passes on to another. Under this system the arable land cannot be redistributed except at long intervals of time, or when the census is taken, whereas the tracts under grass, producing hay unintermittently, are parcelled out every year. The forest remains common property, although every peasant is free to settle there, clear a certain extent of land, and sow his crops. But even then he does not become the owner, and the State removes him at pleasure, merely granting him a few roubles per acre as compensation for disturbance.

The commune is bound to receive into its organization all the exiles that become colonists after the expiration of their sentence. They obtain a site for their house, an acre and a quarter for their garden, and their due proportion of the fields and meadows. But many remain outcasts, receiving neither lands nor rights. This floating element constitutes the *brodyagi*, or vagrant class, whose number is, of course, unknown to the census takers, but who are supposed to average about one-fourth of those condemned to hard labour. In 1848 and 1849 as many as 3,104 prisoners escaped from Nyerchinsk alone. These outcasts thus avoid the hardships of mining and the monotonous life of the cantonments, but in so doing they voluntarily adopt a career which would be intolerable to any but the condemned convict. Nor does the pleasure of being their own masters last very long, for during the hard winter season the only resource in most cases left them is to allow themselves to be confined, under a false name, in some prison far from that whence they have escaped.

To prevent such evasions, the Russian authorities of Transbaikalia and the other Siberian countries were formerly accustomed to destroy the cartilage of the nostrils of all the condemned. Until 1864 they were branded on the forehead and both cheeks with letters burnt into the flesh; but at present the authorities limit themselves to declaring all those as outlaws who escape from the mines, thus giving every one, even Tunguses and Buriats, the right to shoot them down with impunity. This has rendered the natives themselves more cruel, and human life is now held in little account in those regions. The crack of the rifle is soon lost in the silence of the forest. "The antelope," says the Buriat, "yields but one skin; but the *chaldon* (outlaw) yields three—his pelisse, his coat, and his shirt." Yet there is no lack of vagrants even in these districts. They learn to avoid the dangerous places, they take the right direction through the virgin forest by instinct, and they quickly recognise the marks left by the Tunguses, or by other outlaws who have preceded them. From one end of Siberia to the other all the brodyagi have thus covered the land with signs unintelligible, or even invisible to others, but perfectly clear to themselves. They are, moreover, protected by the villagers, who derive a profit by employing them on their farms, in return for their food alone. In isolated houses the outlaw always finds bread, milk, salt, rude garments, left here by the peasantry for their unhappy countrymen. There are many villages where they may reside without fear, and even cultivate the land and found a family, confidently relying on the connivance of all the inhabitants. They have even

formed villages all to themselves, and in unforeseen circumstances, requiring an extra amount of labour, the authorities themselves have appealed to the vagrants, on the tacit understanding of "asking no questions," or demanding their passports. On such occasions hundreds of persons mysteriously emerge from the surrounding forests and undertake the required work. According to the official statistics, the proportion of centenarians will seem to be far greater in Siberia than in European Russia, although the average death rate is lower in the latter country.* But it may be asked whether these pretended Siberian centenarians are not simply outlaws who have been substituted for defunct peasants in the commune. The homeless fugitive, "Ivan the Nameless," or "Michael Know-nothing," has received the papers which, in the eyes of all, constitute him the official representative of a known family. What can it matter if these documents add some twenty or thirty years to his age?

Religious Sects—The Stranniki.

The brodyagi, who have escaped from prison or from their place of internment, are not the only "vagabonds" in the land. In these boundless regions immensity itself has its attractions. Thus the sect of the Stranniki, or "Wanderers," has many representatives in Siberia, where they are ceaselessly roaming over woodlands and highlands in search of that "White Water" which cleanses from all sin, and at the same time insures them everlasting bliss. In most of the towns and villages they find friends, who, though really members of the sect, lead a sedentary life, and outwardly conform to the orthodox religion. Their sole mission is to give hospitality to their "wandering" brethren, and screen them from the police. When they are discovered and thrown into prison, the Stranniki thank the Lord for the trial which has overtaken them, and which must purify their faith. But as a rule the "raskol," or "dissent," finds a less propitious soil in Siberia than in European Russia, and the indifference of the Sibiryaks in religious matters has ended by reacting on the Raskolniks themselves. Except in the valleys of the Altaï and the colonies of the Amur, founded by the Dukhobortzi, the great majority of the Slav population consists of Orthodox Greeks. In all Siberia there are only five Protestant churches, and according to the official returns the Siberian Protestants number altogether only 6,990 from Tobolsk to Vladivostok. A missionary establishment founded at Irkutsk is engaged in converting the natives to the orthodox religion.

Agriculture—The Chase and Fisheries.

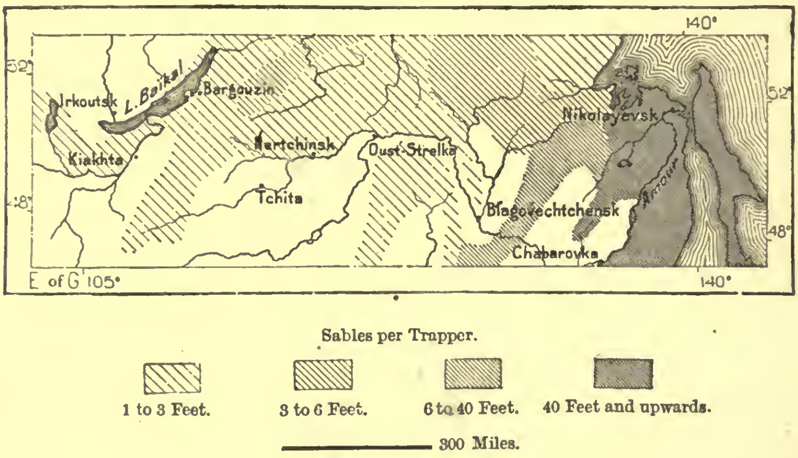
Still in a rudimentary state, the agriculture of Siberia scarcely suffices for the wants of the population. Yet in the southern regions there are excellent lands, which might be made to yield in abundance all the products of the temperate zone in Europe. In a description of Russia translated from the Chinese by Klaproth, the writer expresses his amazement that although they know how to sow, the Russians "do not understand the art of weeding their fields." This remark of the

* One centenarian to 805 inhabitants in Siberia; one to 2,702 in Russia.

Chinese observer holds good now, and the Siberians still repeat the saying quoted by Gmelin, "All that work yields is bad, for it comes not of God." No doubt some Russian Raskolniks and Chinese or Corean immigrants in the maritime province have set the example of systematic tillage, but they have found few imitators amongst the Siberian peasantry. Almost everywhere the fields and gardens have a neglected look. But the grassy lands are naturally very fine, abounding in savoury herbs, and supporting large herds of cattle. The horses, although ill-cared for and living in herds almost in a wild state, are also very numerous in Siberia, where they reckon nearly one horse to every inhabitant. The "Siberian plague," which makes great ravages amongst the herds, is said to have originated in the Baraba steppe.

The chase, which has here an historic interest, having led to the discovery and settlement of Siberia, has remained one of the chief industries of Asiatic Russia.

Fig. 231.—Produce of East Siberian Sable Hunting from 1850 to 1855.
Scale 1 : 25,000,000.



The Yakuts and Tunguses still continue, as they did two hundred years ago, to yield to their conquerors that tribute of peltries which has been the source of so many atrocities and infamous speculations. Nevertheless, this industry is still followed by entire villages of *promishloniye*, who are the noblest, most upright, and daring hunters in Siberia. Nearly fifty different species of animals are trapped for their furs, and they perish by the million during the hunting season. The yearly export of peltries from Siberia, exclusive of those taken from marine animals, represents a gross value of from 4,000,000 to 5,000,000 roubles. The standard price of all the Siberian skins is regulated by that of the sable, which averages from 8 to 10 roubles, though the finest, of a very deep colour, and sprinkled with white hairs, fetch as much as 80 roubles even on the spot. But the sable is a very little animal, smaller than the European marten, and, as the skin of the back alone is used in the preparation of costly pelisses, as many as eighty skins are required for one robe alone, which thus comes to cost nearly 5,000

roubles. The fur of the black fox is even more highly prized than that of the sable, and some of the finer specimens have been sold for over 300 roubles. The skins of the squirrel alone furnish about a third part of the revenue of Siberia from this source, and from ten to twelve, and even fifteen millions of these rodents have been killed in a single year during their migrations. Through Kiakhta, China receives a considerable portion of these peltries, but a far larger quantity is purchased by Europe. At the Irbit fair the Russian, Polish, and German dealers compete for these costly spoils, whose value is increased tenfold before it reaches the consumer.* Several species, especially of the more highly esteemed fur-bearing animals, are known to have considerably decreased since the *taiga*, or Siberian woodlands, have been brought within the influence of the European markets. Nevertheless, none of the land species pursued by the Siberian trappers have entirely disappeared. The forest offers them better shelter than the marine animals find on the shores of the ocean.

The Siberian fisheries possess an economic value of the first importance, for they supply their chief support to entire populations, not only amongst the natives, but even in many communities of Russian origin. But the capture of large species has considerably fallen off, at least in Lake Baikal. Nor do the Russians any longer follow the whale in the Arctic waters, while in the pursuit of the smaller cetacea they have been succeeded by the Americans in the North Pacific, and in the Kara Sea by the Norwegians. Hence, apart from the local consumption, which is enormous, the yield of the Siberian fisheries for the export trade is insignificant. In this respect Siberia, with its thousands of miles of coast-line, its great lakes and countless rivers, is of less importance than the basins of the Kuban, Terek, and Kur alone, on both sides of the Caucasus.

Mining Industries.

The mining industry has also fallen off considerably since the middle of the present century. But the extent of her metalliferous deposits none the less insures to Siberia a high position amongst the countries producing the precious metals. On an average the Russian Empire supplies to trade the eighth part of the annual gold yield of the whole world, and three-fourths of this quantity, or about the eleventh part of the total production, comes from Siberia. The first gold-washings occurred about the beginning of this century in the torrents of the Siberian Urals, and the mines of the Altaï had already become profitable to their owner, the Czar. But the period of prosperity set in about 1825, and lasted till the middle of the century. Since that time the number of mines and gold-washings has no doubt increased, but the profits of these undertakings have greatly diminished. The

* Peltries brought to the Irbit market in 1876:—

	Skins.		Skins.
Squirrels (small grey)	5,000,000	Martens of divers species	750,000
Ermine	215,000	Sables	12,000
Hares	300,000	Sundries	200,000
Foxes of divers species	82,000		

managers of the various works generally lack the necessary instruction, and are even ignorant of the nature of the rocks which produce the auriferous sands. These sands have become impoverished in most of the rivers, since thousands of gold-seekers have begun to work them. Thus the mean proportion of metal in the auriferous sands of the Yenisei government has gradually decreased from the three-thousandth part gold to one-fifth or one-tenth of that quantity. Moreover, the owners of mines have lost the monopoly which formerly enriched them, and they no longer command the services of thousands of serfs given to them by the Crown. Labour is now free, and while the value of gold is gradually diminishing in the market compared with that of provisions and industrial produce, the wages of the miners are increasing. Yet the wretched condition of the latter has scarcely improved. Working in the half-frozen water of the streams, exposed to the inclemency of an excessively severe climate, devoured by mosquitoes, obliged to

Fig. 232.—Gold-washings in the Amur Basin.
Scale 1 : 10,000,000.

120 Miles.

pass the night in foul outhouses, they are supplied with insufficient food, washed down with pernicious alcoholic drinks, which they are compelled to purchase at three or four times their value in the booths of their employers. At the end of the season, when the sands again become hardened by the frost, most of them are no better off than when they set out for the mine, and those who have managed to save a little money immediately squander it in the taverns of "London," "Paris," and the other neighbouring villages of the Olokminsk district. There are altogether about a thousand gold-washings, yielding 80 lbs. of gold, or perhaps 100 lbs. including the metal concealed from the fiscal officers in order to avoid paying the tax. Since 1726, when the Siberian gold-fields first began to be worked, the total yield cannot be estimated at less than £120,000,000.* Next to the Urals and Altaï, the most productive auriferous regions are those of the Upper Yenisei, Angara, Vitim,

* Yield of gold in European and Asiatic Russia from 1720 to 1876, 3,125,580 lbs., valued at £176,800,000. Gold-seekers in East Siberia in 1877, 51,272.

and Olokma basins. The present annual yield of gold in Siberia is valued at £1,200,000.

The yield of silver is proportionately far less considerable. Nevertheless the mines of Transbaikalia, which are the most important, and which have been worked since the beginning of the eighteenth century, have produced argentiferous lead ores, from which have been extracted over 7,500,000 lbs. of silver, valued at upwards of £20,000,000. The present yearly average is about £200,000. Copper mining has also acquired some importance in the Ural and Altaï regions, but the great metallurgic industry is that of iron. The first works were founded on the Siberian slopes of the Urals two hundred and fifty years ago, and nearly 100,000 hands are now employed in the various factories of the Yekaterinburg mining district, which yields some of the finest iron in the world. The annual production of the Ural region has been trebled since the beginning of the present century. At the same time the increase during the same period in most civilised countries has been far more considerable.* Graphite is also mined in the Urals, as it was till recently in Mount Alibert, near Irkutsk. Siberia draws from her salt lakes, rivers, and mines sufficient of that article for the local demand, while she also possesses extensive coal measures in the Kusnetzk district, in the Lena and Amur basins, and in Sakhalin. But all these resources have hitherto been but little utilised. Such vast accumulations of fuel necessarily lie idle in a country without industries, and almost destitute of inhabitants.

Manufactures—Trade.

Manufactures, such as those which flourish in Europe, could naturally be developed only in the southern regions of Siberia, where the Russian population has been concentrated. But even here they are far from numerous, and their total yield still represents but a very small portion of the various manufactured wares required to meet the annual local demand. The enterprising members of the community prefer the chance of rich "finds" in the gold-fields to steady manual labour, and most of the available money of small capitalists is absorbed in these ventures. Hence the wants of the inhabitants still continue to be supplied from abroad. Hardware comes from the Urals; china, woven goods, and leathers from European Russia; genuine or sham fancy wares from the far West. The people of East Siberia eagerly purchase the most trumpery objects of this class in the markets lying to the west of the Irtish and Tobol Rivers.

Most of the local factories formerly commanded the labour of the convicts, and, having thus no wages to pay, they were able to compete in the production of certain articles with their foreign rivals. But at present manual labour is quite as dear in Siberia as elsewhere in the Russian Empire, and even in the Yenisei and Amur basins the rate of wages is higher than in European Russia. The only really important local manufacturing industry is the distilleries. In Asia, as in Europe,

* Annual yield of iron in the Urals and Siberia from 1797 to 1857, 169,000 tons; from 1867 to 1877, 492,000 tons.

large quantities of grain and potatoes are converted into alcoholic drinks, which are retailed in innumerable taverns. Yet drunkenness is perhaps less prevalent in Siberia than in Russia proper. Including these distilleries, the number of industrial establishments between the Ob and the Amur amounted in 1876, according to Subbotin, to 1,100, employing 4,000 hands, and producing manufactured goods valued at 8,000,000 roubles, or nearly 2 roubles per head of the population.

But industry must necessarily remain in a rudimentary state in a country almost destitute of towns, the natural markets for labour of all sorts, as well as the true nurseries of study, refinement, and social amenities. Even including the mining districts of the Eastern Urals, the whole of Siberia, a region larger than the continent of Europe, contains no more than seventeen towns with a population of upwards of 5,000. In other words, there is, on the average, only one such town to a space as large as France and Italy combined. And even these towns are more like large villages, most of the houses being constructed of wood. So rare are stone buildings in Siberia that in 1875 more than half the towns, or 18 in 31, were destitute of a single structure of this material, and where such did exist they rarely amounted to more than ten or twelve. In some parts of East Siberia the fear of earthquakes would appear to have a certain influence in keeping up the practice of erecting exclusively wooden houses, but this method of building is undoubtedly due mainly to the rudimentary state of Siberian civilisation. In any case it is not a little remarkable that the towns in this region increase very slowly in population, the actual growth in this respect being mostly limited to the rural districts. Such expansion as does take place is due in the towns far more to the arrival of Russian settlers than to the natural excess of the birth rate.

Important fairs are still held in the open country, and certain clearings along the banks of the Amur and Lena become at definite times of the year a rendezvous for thousands of Yakuts, Tunguses, and Russians. Even the famous fair of Irbit was originally nothing but a great "camp meeting" in the midst of the forest. The Siberian dealers are nearly all Russians, either hawkers from Vladimir, who visit in succession all the markets as far as the Yakut and Buriat territories, or else shopkeepers or clerks from North Russia, who have been hired out, or rather sold by their families while still mere children. The town of Cherdin alone, in the government of Perm, annually supplies to this traffic from twenty to forty children, whom the carriers cart away at a fixed price to the Irbit fair, and who are then engaged as unpaid apprentices for a term of three years by some remote master tradesmen, proprietors, or merchants.

Siberia naturally does a considerable trade with European Russia, as most of the manufactured goods and fancy articles arrive from beyond the Urals. But the annual exchanges with China are still relatively of slight importance, and have even diminished when compared with the general movement of the empire, although the two states have a common frontier of some thousands of miles in extent. The exchanges, such as they are, are greatly in favour of China, which is chiefly an exporting country. But the quantity of tea forwarded through the Siberian custom-houses

increases very slowly, owing to the constantly increasing competition of the sea route through the Suez Canal with the overland commercial highways. On the other hand, the products of the Russian and Siberian factories are more suited to the taste of the Kirghiz and Mongolians than to that of the Chinese, who are more difficult to please, and who in any case receive through their seaports all the European wares which they require. No doubt the Russian maritime province supplies "sea-cabbage," trepang, and fish to the surrounding Chinese districts. But this international trade can have but a slight economic importance so long as Russian Manchuria remains uninhabited except by a few scattered communities.* The absence of commercial relations between Siberia and the neighbouring eastern regions is betrayed by the small number of telegraphic dispatches transmitted from Russia to China and Japan, which in 1878 amounted altogether only to 1,110.† The messages forwarded in transit between West Europe and China and Japan viâ Vladivostok are far more numerous than those of Russia itself.‡

Highways of Communication—The Trakt—Railway Projects.

With the gradual development of her means of communication the trade and population of Siberia cannot fail to increase. The *trakt*, as the great highway from Perm to Kiakhta is usually called, has already done more for the civilisation of these regions than the waterways themselves. The inhabitants have become concentrated in groups along this route, and at certain distances from both sides of it. It is traversed by long lines of waggons and sleighs while the fairs are being held, and, although sinking here and there in the quagmires, the carts will cover from 45 to 60 miles a day. The horses, which are of a special breed, feed *en route* from a crib attached to the preceding cart, and exposed to the weather, so that the oats often get mixed with the snow. At the head of the convoy is the head-man's waggon, decorated with a small shrine, a sort of ambulatory chapel containing a sacred image. This *izvos*, or carriage traffic, has caused thriving villages to spring up by the roadside, generally consisting of a single line of houses from 1 to 1½ miles long. These two-storied houses, with their cheerful balconies, present a remarkable contrast to the wretched izbas of Central Russia. Some of the stages occurring at longer intervals along the trakt have grown into towns, of which those on the banks of rivers, and consequently at the converging point of several routes, are naturally the most important. On the other hand, the windings of the trakt itself have caused the decay of other towns, which have thus become abandoned in favour of

* Trade of Russia with China, according to Subbotin :—

	Exports.	Imports.	Total.	Proportion to the total Trade of the Empire.
Average from 1827 to 1831	1,200,000	200,000	1,400,000	1 per cent.
,, 1842 to 1846	6,500,000	6,500,000	13,000,000	8 ,,
,, 1861 to 1868	5,800,000	4,500,000	10,300,000	2·5 ,,
Year 1876 . . .	2,500,000	14,100,000	16,600,000	2 ,,

† To China 595, to Japan 515.

‡ Dispatches in transit viâ Vladivostok, 246,332 words, or about 20,000 messages.

more convenient sites, and fresh centres of population have in this way sprung up in the midst of the steppe or forest.

The future railways, with their various side branches, will have analogous results, but their construction must be long delayed by the very immensity of the distances and the sparse population of the regions to be traversed by them. No doubt a line has already crossed the Urals, on either side of which are two stations, respectively known as "Europe" and "Asia." But this line is not yet connected with the European system. The branch ultimately destined to unite the European and Central Asiatic with the great trunk line from Yekaterinburg to Pekin will probably pass through Orenburg. The distance from the Urals to the capital of China is estimated by Bogdanovich at about 3,480 miles, of which rather more than 660 lie within the Chinese frontier.

The first section of this main line between Yekaterinburg and Tumen has already been begun, and although only 225 miles long, it is expected to cost about 25,000,000 roubles. The capital required to construct the whole line from the Urals to the Pacific seaboard cannot be estimated at less than £80,000,000. Siberia has hitherto remained beyond the influence of international movement, but when it has become the direct and necessary line of passage for most travellers between Europe and the extreme east a genuine revolution will have been accomplished in the history of mankind. China cannot be easily brought within the sphere of a universal international railway system except through Siberian territory. The southern and western frontiers of the "Middle Empire" are fringed by plateaux and highlands rising above the line of perpetual snow. But towards the north broad gaps and regularly sloping depressions give access at several points from the Irtish and Amur basins to that of the Hoang-ho. The highway of the ancient military migrations of Huns and Mongols might easily be reopened, to be henceforth traversed rather by locomotives and express trains than by conquering hosts. What nations and races are destined most to benefit by this future highway crossing the eastern hemisphere is one of the most serious problems still awaiting solution.

Education—Administration.

The Siberian people are not preparing themselves by a solid system of education for their high destinies in the civilised world. This region is still far below Europe in the relative number of its schools and scholars. In some towns there are scarcely ten children receiving regular instruction, and in 1870 the whole of East Siberia had only 283 schools, attended by 8,610 pupils, in a total population of 1,500,000. In many districts the Russian colonists, lost amidst the surrounding Yakut peoples, have even forgotten their mother tongue and national usages, and they now purchase their wives by paying the *kalim* like the other natives. Nevertheless several Siberians have already distinguished themselves by their scientific attainments and literary labours. Among contemporary Russian savants and men of letters there are some even with Buriat and Yakut blood in their veins, and their works have already penetrated to the masses. But the young men of Asiatic

Russia, anxious to prosecute their studies, are still obliged to proceed to Europe. The university so long expected, and which was endowed by anticipation some fifty years ago, is only just beginning to rise above its foundations. Its erection was not definitely decided on by the Council of State and approved of by the late Czar, Alexander II., till the year 1878. In the same year throughout the whole of Siberia, with a population of 4,000,000 scattered over an area larger than all

Fig. 233.—Vladivostok and the Eastern Bosporus.
Scale 1 : 86,000.

Europe, there were only two periodicals, one weekly ana one monthly, apart from the official notices published in each of the provincial capitals.

Siberia comprises two great governments, that of West Siberia, with Omsk for its capital, and East Siberia, whose capital is Irkutsk. Each of these main divisions is subdivided into governments and provinces, which are again distributed into districts and circles. The province of the Amur, whose administration partakes more of a military character than any other part of this vast domain, is divided

into Cossack "regiments" and "battalions." But on the whole the Government of Siberia may be said to be modelled on that of European Russia. Municipal, judicial, religious institutions are all based on the same uniform plan, and the differences arising out of the vastness of the distances and the local customs are being gradually effaced. Formerly the true masters of the land beyond the urban districts were the dealers, who, through their monopoly of the peltry trade, disposed of the very lives of entire populations. But although they have still great power, their authority is now, at all events, second to that of the commanding officers and higher Government functionaries. Practically the representatives of the Czar possess almost absolute control, and their will or caprice is implicitly obeyed. A region of banishment and prisons, peopled by convicts and the children of exiles, far too few in numbers and too scattered to form communities capable of combined resistance, Siberia has never yet thought of asserting its autonomy. Even were she one day to assert her independence, her inhabitants are too closely allied to the European Russians by the ties of a common origin and civilisation to allow the future of both countries ever to be separated. From the Danube to the Amur, Russia and Siberia have the same political destinies, and the same social spirit must continue to animate both nations, even though one autocrat may some day cease to control the aggressive forces of each.

Siberian Political Life.

The people of Siberia, as Kolb well observed, has hitherto led a life of its own, troubling itself little about the remote centres of government in St. Petersburg or Moscow. A Polish exile wrote some thirty years ago, "This country will soon cease to be a region of terror and captivity, for it possesses all the means (with the exception of its being a very cold country) of becoming in time a land of prosperity and freedom. Siberia has no nobility, no peculiarly privileged classes, very few officials, and a population which has never been in bondage, and knows how to govern itself." Another circumstance has since been added, viz. the powerful, ever-increasing influence of the neighbouring country of North America and its republican institutions, which reach as far as Bering Strait, since the sale of the Russo-American colony. Among the admirers and advocates of these institutions are those Poles who were sent to Siberia by tens of thousands after the last insurrection, and who find here more freedom and liberty than in any other part of Europe. The communication between Novo-Nikolayevsk and the rapidly growing city of Francisco constantly increases. Professor Kachenusky, of Charkov, has remarked that "the further we advance towards the east the freer and more independent do we find life and opinions among us. The principle of independence is infinitely farther advanced in Moscow than in St. Petersburg, but most of all in ill-fated Siberia."

GROWTH OF THE RUSSIAN EMPIRE.

Our account of European and Asiatic Russia may be fittingly concluded with a brief retrospect of the steps by which the empire has gradually acquired its present enormous expansion. Its colossal growth, remarks Kolb, began in 1581, in which year the Cossack Hetman Yermak Temogefev surrendered to Czar Ivan II. the vast regions of West Siberia, which he had overrun with amazing rapidity. But it was not till the time of Peter the Great that Russia began to be held in any regard by the more civilised states of Christendom. In 1707 Peter took possession of the recently discovered peninsula of Kamchatka, and, what was of far more importance, by the Peace of Nystadt, in 1721, Russia wrenched from Sweden parts of Finland, Ingria, Karelia, Esthonia, and Livonia. Azov, which was taken from the Turks in 1699, was again lost in 1711. But, on the other hand, the Czar took from the Persians Daghestan, Shirván, Ghilán, and Derbent, large portions of which were, however, restored to the Shah in 1732 and 1736.

The Kirghiz Kasaks were subdued in 1730, and the Ossetes of the Central Caucasus in 1742. The easternmost portion of Siberia, the Aleutian Islands, and the Bering Archipelago were also incorporated in the same year. The Finnish province of Kymenegard was secured by the treaty of Abo in 1743. Then followed the three partitions of Poland, under Catherine II., in 1772, 1793, and 1795, Russia thereby acquiring nearly two-thirds of this once powerful monarchy.

By the Peace of Kuchuk-Kainarji, July 22nd, 1774, the Turks finally surrendered Azov, part of the Crimea, and Kabardia in Caucasia. The rest of the Crimea followed in 1783, and by the Peace of Yassy, January 9th, 1792, Oczakov was absorbed. Georgia also came under the protection of the Czar in 1783, and Kurland and Leni in 1793.

In 1793 also followed the conquest of Persian territory as far as the river Kur, while the formal annexation of Georgia was effected in 1801. Although worsted in the war of 1807 by the French, Russia nevertheless acquired by the Peace of Tilsit, July 7th, the province of Byalistok, which had been taken from her ally, Prussia. The Peace of Vienna, October 14th, 1809, transferred the Circle of Turnopol and part of East Galicia from Austria to Russia. The Peace of Friedrichshaven, November 17th, 1809, deprived Sweden of what remained to her of Finland; the Peace of Bucharest, May 28th, 1812, took Bessarabia from the Turks; that of Tiflis, in 1813, robbed Persia of parts of the Caucasus; and two years later the Congress of Vienna gave Poland to her ancient rival.

After fresh wars the Persians lost the provinces of Erivan and Nakhichevan (now called Russian Armenia) by the Peace of Turkmansheir, February 22nd, 1828; and the following year, by the Peace of Adrianople, the Turks surrendered Anapa, Poti, Akhaltzik, and Akhalkalaka. The desire to precipitate the dissolution of the Ottoman Empire led to the Crimean war of 1853, in which England and France joined in 1854, and Sardinia in 1855, and which ended in the Peace of Paris, March 31st, 1856. The Russians were now compelled, for the first time for over a

century, to agree to a cession of territory, restoring to Rumania the left bank of the Danube in Bessarabia, in which tract were included Ismail and Kiala.

The final subjection of the whole of Caucasia was effected in 1859 and 1864, when the Circassian people migrated in a body to Turkey. Then followed, by agreement with China, the annexation of Manchuria as far as the left bank of the Amur. A ukase of February 29th, 1868, extinguished the last spark of Polish political life. The khanates of Western Turkestan (Bokhara, Khiva, and Kokhan) were subdued in the next few years, and, while a semblance of freedom was left to Bokhara and Khiva, Kokhan was completely absorbed under its old name of Ferghana. On the other hand, Russia withdrew from the New World in 1867, when Russian America (Alaska) was sold to the United States. This vast region, however, had never been formally incorporated, having been rather the property of a chartered trading company.

The late Russo-Turkish war brought the Czar's forces to the gates of Constantinople, and although British intervention prevented the occupation of that famous capital, the ensuing Congress of Berlin, July, 1878, awarded to Russia fresh territory in Asia—Batûm, on the Euxine, and the fortress and district of Kars, besides restoring to her the portion of Bessarabia she had been forced to surrender to Rumania after the Crimean war.

Lastly, after repeated failures, the Czar's troops triumphed early in the year 1881 over the Tekke Turkomans of the Daman-i-koh, and the Turkoman country, from the Caspian nearly to the Herat district, was in the same year incorporated in the newly organized Trans-Caspian territory, dependent on the Government of the Caucasus. This makes Russia absolute mistress of all Western Turkestan, the Merv oasis alone excepted. The changes caused by these movements have necessitated a rectification of the Russo-Persian frontier between the Caspian and Afghanistan. The Boundary Commission charged to lay down the new line has not yet concluded its labours, but the British Government is not represented on this commission, which, it is understood, will award to Russia all the northern slopes of the Kuren-dagh, including the fertile Dera-göz district, and the Persian town of Askabad, if not Sarakhs, bringing the Russian frontier close to Herat. Thus disappear the vast spaces which certain British statesmen, till quite recently, supposed would continue to intervene between the Russian and British dominions in the East.

Meantime, it may not be out of place to recall the warning words of Arminius Vambéry, written at a time when Russia had not yet advanced beyond the Aral and Caspian Seas, and while the Turkestan khanates and the Turkoman country were still independent:—"The drama of a collision of the two great colossi in Central Asia, which political dreamers imagined years ago, continues still far from actual performance. The question moves, it is true, slowly, but still always in a forward direction. Let me, following the natural course of events, without undue warmth, endeavour to acquaint the reader with the motives that influence me when I disapprove of the indifference of the English to the Russian policy in Central Asia. . . . .

"The real progress of the Russian designs is beyond all doubt. As I before

said, the interests of civilisation make us wish the most entire success to the Russian army; but still the remote consequences of an acquisition once made suggest a highly important and complicated inquiry. The question whether Russia will content herself even with Bokhara, or will allow the Oxus to become the final boundary of her influence and of her designs, is difficult to answer. Without plunging into any deep considerations of policy, I may remark that it seems very probable that the court of St. Petersburg, in return for her persevering policy of sacrifices pursued across the deserts for years and years, at great expense and labour, will seek some richer compensation than is to be found in the oases of Turkestan. I should like, indeed, to see the politician who would venture to affirm that Russia, once in possession of Turkestan, would be able to withstand the temptation of advancing, either personally or by her representatives, into Afghanistan and Northern India, where political intrigues are said to find always a fruitful soil. At the time when the Russian columns, under the orders of Peroffsky, threw their ominous shadow from the west shore of the Aral Sea as far as Kábul—at the time when the spectre of Vitkovich* appeared in that city and in Kandahar, the possibility of such complications as those alluded to was foreseen. And cannot that which has once occurred, when the necessity arises, occur a second time?†

"Without, therefore, lending to the question the foul colouring of envy or jealousy, I consider myself justified in disapproving of England's indifference to the plans of Russia in Central Asia. Such is my humble opinion; but whether the British Lion is to come into direct hostile collision with the Russian Bear in those regions, or in brotherly fashion they are to share and share alike, is a question which I will not venture nearer to approach."‡

The foregoing rapid sketch of the continuous growth of the Russian Empire during the last three centuries may be summed up in the subjoined table:—

Russian Empire under	Date.	Area in Square Miles.
Ivan Vasilivich I.	1462	382,000
Vasili Ivanovich	1505	510,000
Ivan Vasilivich II.	1584	1,530,000
Alexis Michaelovich	1650	5,039,000
Peter the Great	1689	5,953,000
Anne	1730	6,888,000
Catherine II.	1775	7,122,770
Alexander II.	1868	7,866,000
Alexander III.	1881	7,950,000

INCREASE OF POPULATION.

1722	14,000,000	1829	50,500,000
1742	16,000,000	1838	59,000,000
1762	19,000,000	1851	65,000,000
1782	27,500,000	1870	78,000,000
1793	34,000,000	1877	86,250,000
1803	36,000,000	1878	87,722,500
1811	42,000,000	1881	88,500,000
1815	45,000,000		

* This was the name of the Russian agent sent by the court of St. Petersburg to Afghanistan in 1838, with large sums of money to be employed in intrigues against England.

† These prophetic words were fully verified in 1878 by the arrival of a Russian mission in Kábul, an event which brought about the late war between the British and the unfortunate Amir of Afghanistan, Shír Ali.

‡ "Travels in Central Asia," 1864, p. 440.

The three districts directly affected by the recent annexations in Turkestan are Merv, the Persian frontier territory of Dera-göz, and the Akhal Tekke country on its border. Regarding all three interesting and valuable information has been received during the present year, and is here subjoined.

Merv.

During the summer of 1881 Mr. O'Donovan was detained a prisoner in this oasis, respecting the present state of which Colonel E. C. Stewart also collected some particulars in 1880-1, while residing in the Dera-göz.

"Meru, or Merv," writes Colonel Stewart, "the city on the Murghab, is mentioned in the earliest records of the Aryan race. Balkh, Merv, and Seistan were the places where Iranian history begins. The country, watered by the Murghab and Tejend Rivers, was known to the Greeks as Margiana, and it was visited by Alexander the Great, and Antiochus Nicator ruled on the Murghab. Merv was the seat of a Christian Archbishop of the Nestorian Church during the reigns of the Sassanian dynasty of Zoroastrian Kings of Persia, as was also Toos, near Meshed in Khorasan.

"The Arabs captured Merv about A.D. 666, and found it a very rich city. Until this period it had a Christian Archbishop. At the time of the Arab conquest the Salor and Saluk tribes of Turkomans were in the country. The lieutenants of the Khalifs of Bagdad ruled Khorasan, with Merv as their capital.

"On the 25th of February, 1221, Merv was besieged by a Mogul army under Tulin, a son of Jenghiz Khan; the place was captured and the population put to death with very few exceptions. It is said by Ibn-ul-Ether that 700,000 dead bodies were counted. This is probably an exaggeration, but it shows how large a city Merv must have been that a writer could suggest that 700,000 persons were put to death in it. The Moguls had a curious and methodical way of numbering the slain. When a thousand dead had been completed, they placed one body with its head buried in the ground and its feet upwards, so that the thousands might be conveniently counted.

"The last Merv was the city so bravely held by Bairam Ali Khan Kajar. A branch of the Kajar family who now rule Persia had been placed in Merv by Shah Tamasp to defend this outlying province, as they were renowned for their courage. During the troubles that followed the death of Nadir Shah, Merv was attacked and captured from the Persians by Begge Jan, called also Amir Mâsum, the Amir of Bokhara, in 1784. Bairam Ali Khan was slain outside the town, and his son, Mahomed Hussein Khan, who made a glorious defence—even the women joining in it—was carried captive, with the population that were spared, to Bokhara. Since that date there has properly been no such town as Merv. The Merv country still exists, but there is nothing worthy the name of town there. The Amir of Bokhara broke down the great dam on the Murghab, which filled the numerous canals and fertilised the whole country, in the hope of rendering it a desert inaccessible to Persia.

"After 1784 it belonged to Bokhara for some years, and the Salor and Saruk Turkomans encamped on it. It was subsequently taken from the Amir of Bokhara by the Khan of Khiva, whose officials were found here living in a poor village called Merv when the place was visited by Abbott early in 1840. This place, which was a possession of the Saruk tribe, and which is described by Abbott as consisting of about one hundred mud huts, has been destroyed by the Tekke Turkomans, who began to settle in this country about 1830, and finally drove the Saruks further up the Murghab to Yulutan and Panj Deh. I have not been able to discover the date of the destruction of this last and most wretched of places which have borne the name of Merv, but it was probably about 1855.

"This deserted place was occupied by Persian armies in 1857, under Sultan Murad Mirza Hissam-i-Sultunut, and again in 1860 by Hamza Mirza Hashmat-ud-Dowlah, whose army was disastrously defeated in an attack on Kala Kaushid Khan, then only just commenced and in a very rudimentary state.

"The Tekke Turkomans have possessed themselves of the best part of the country. They have built a large fort on the eastern bank of the most westerly branch of the Murghab. It is situated 25 miles below the great *band*, or dam, which divides the Murghab into many canals or branches. The place where the great band is situated is called Allahsha, where there is a ferry over the Murghab, which is used for a few weeks in the spring when the river is in high flood. At other times there are wooden bridges.

"The fort of Kaushid Khan, which is very strong indeed, is protected by the Murghab River on two sides, being built in the loop of the river. It is about 2½ miles long and 1¼ wide. The Tekke have most wonderful confidence in the strength of the place, which will contain, they say, 50,000 alajaks, or Turkoman tents. It is called Kala Kaushid Khan from the name of its founder, Kaushid Khan, the chief of the Beg clan of the Tekke tribe. It was commenced in 1860, and the Tekke have worked at it by fits and starts ever since.

"When the Persians now speak of Maur, or Merv, they mean Kala Kaushid Khan. Turkomans themselves never speak of Maur as a town; when they use the term at all they mean the district where Merv was formerly situated. The fact of the Persians speaking of Merv as a town, and as a place captured by their armies, has led to endless confusion. There are no signs of a town about Kala Kaushid Khan. There are about 6,000 tents of the Beg tribe generally pitched near it, and each chief man has a guest-house of mud or sunburnt brick, but they themselves live either in felt tents, or in places where reeds are plentiful, in reed or mat-huts, which can be carried away on camels.

"Near Kala Kaushid Khan there is a boys' school, with five or six houses for the mollahs, or priests, who teach in it, belonging to Mollah Turah, the chief mollah of the Beg tribe. A market is held on the river bank near the fort, and here the Jew traders who frequent the place, each trader being under the protection of some powerful Turkoman, have built small open enclosures, without any roofs, where they expose their goods for sale on the two days in a week when a market is held.

"When Persians speak of the bazaar of Merv they mean this open market-place.

Inside the fort some alajahs are pitched, and the family of Kaushid Khan have a guest-house there. The fort, however, is kept more as a place of refuge than as an ordinary habitation. From what I could gather the portion of the country fit for cultivation is about 90 miles long, and extends to about 11 miles on each side of the river. The ground is very fertile, and produces melons and water-melons in plenty and of great excellence. Melons constitute one of the exports to Dera-göz, both fresh and dried. Even at Meshed the melons of Merv are much liked, and are sent by rich people as presents to one another.

"General Abbott, who visited this country in 1840, says, 'The profusion of water renders the soil productive, but it has not strength to bear any but the poorer sorts of grain.' In a previous paragraph he says, 'During the misrule and anarchy of the past sixty years the ancient dam of the Murghab was neglected and carried away. The dam is again set up, and the lands are brought under culture.' I gather from this that the dam had not long been repaired when Abbott saw it.

"From the Tejend River, to where the first canal from the Murghab is reached, a space of some 85 miles has to be passed over either without water at all, or on some of the roads there are wells of brackish water at about 66 miles after passing the Tejend. The only easy road to the Merv country without constructing a canal is from Herat and up the Kushk stream to its junction with the Murghab. In former days Herat as well as Merv belonged to Persia, and this road was much used. Also in former days canals from the Tejend near Sarakhs ran out a long way into the desert, and made the journey by Sarakhs a comparatively easy one, which it certainly is not now. There are still water reservoirs and caravanserais in ruins on the road, showing where the old road to Merv ran.

"A canal which formerly existed, and which led from the Tejend River near Sarakhs to Kacha Kum (within 20 miles of the Merv oasis), could be easily reconstructed. Kacha can be still traced from the Tejend to this place, and in 1860 Hamza Mirza Hashmat-ud-Dowlat, the Persian general, employed his army for a few days in damming up the Tejend and turning it into the bed of the old canal. His efforts were successful, and the water ran for many miles in the bed of the old canal and supplied his army for several days. The water did not reach so far as it formerly did, but only to a place called Kurk Tepe, or the Wolf's Mound. Still this was an immense assistance. A little more time and a little more engineering skill would no doubt have sent the water as far as it formerly went, to Kacha Kum, from whence it is only about 20 miles across the desert to the first canal from the Murghab." *

It thus appears that Merv has been living on its reputation since the year 1784, when it was destroyed by the Amir of Bokhara. Since then it has absolutely ceased to exist as a centre of population, and although it has been succeeded by a strong fort, both the fort and the oasis have lost all strategic importance since the advance of the Russians in the spring of 1881 along the Daman-i-koh frontier of Khorasan. The railway in their newly organized Trans-Caspian territory was completed in September of the same year as far as Kizil-Arvat, and the whole

* *Proceedings of the Royal Geographical Society*, September, 1881.

country as far as Sarakhs, on the Perso-Afghan frontier, is being rapidly reduced to order. From this extreme point the natural route to the interior of Afghanistan lies through the Tejend and Hari-rud River valley as far as Herat, and thence in a direct line across the Helmand to Kandahar, and so on over the Khojak and Gwaja Passes of the Khoja Amran range to the Pishin valley, which is now British territory. There is another, though far more difficult, route from the Oxus through Balkh and over the Bamian Pass of the Hindu-Kush down to the Kábul River valley. But the Tejend is a long way west, the Bamian a long way east of Merv, so that Merv lies, not on the route, but between the routes leading from Russian Turkestan to Afghanistan and India.

In any case, Merv, or rather the fort of Kala Kaushid Khan, could easily be either masked or occupied whenever that step may seem expedient to the rulers of the Aralo-Caspian basin. What the Persians did twice in this century the Russians will not fail to do when it suits their convenience. By nearly flooding the old canal from the Tejend they can arrive within 20 miles, or a day's march, of the oasis. Hence nothing now remains of any moment between the two great Asiatic powers, whose frontiers are practically conterminous all along the line from Herat to the Hindu-Kush.

The consequences of these altered conditions are thoroughly understood and already openly discussed in Russia. A writer in the *Novoye Vremya* recently observed significantly that "the annexation of the Turkoman country occurs opportunely with the cession of Kulja to China. The advantages to be derived from our new acquisition are principally strategical. The importance which the new territory possesses is threefold, as affecting the routes leading into Central Asia, the pacification of the Trans-Caspian region, and, lastly, our new relations to the neighbouring Asiatic States on our extended southern frontier. It is well ascertained that the route along the river Atrek, and up the Tejend valley to Herat and Kandahar, is by far the best, if not the only one, in the event of a Russian expedition against British India. The occupation of a strong base on this route is of vast importance in a military sense, and must naturally influence the friendly disposition of England towards Russia. The more resolutely we take up an advanced position on the road to India, the more yielding becomes England's policy in the Eastern Question. Hence the occupation of the Daman-i-Koh by the Russians has been followed by the withdrawal of the British from Kandahar."

The Dera-göz.

In view of its probable peaceful acquisition by Russia, the reader may be glad to have the subjoined brief account of this little-known tract by Colonel V. Baker, one of the few Europeans who have visited it in recent times:—

"The Dera-göz instead of being a town, as marked on all old maps, is a province containing more than a hundred villages, the chief town being Mohamedabad, nine miles' distance from Chepishli; this town, together with Nowhandan and many villages, lies on a plain at the foot of the main range, surrounded by small

mountains which separate it from the desert; and beyond these mountains, and on the verge of the desert, lie important forts, such as Khosrabad, Sarun, and many others. In the middle of the plain there is a spring, but the main water supply is derived from a rapid river which descends from the Kuren-Dagh range near Duringa, and then waters several villages and also the towns on the plains. In tracing Persian rivers on the map the student must ever remember that, through the water being taken for irrigation, they usually become less and less after they leave the mountains, and are eventually so expended.

"Dera-göz certainly has a more verdant well-to-do aspect than any Persian province that I have seen except Ghilan and Mazandaran, where nature has done everything, but man nothing. Even the face of the mountain has a freshness not seen from the southern side. The people are Kurds, they have been ruled by the same family for 150 years, and there is a manliness about them, combined with a degree of order and cleanliness, that is quite unusual in Persia. In case of emergency Dera-göz can turn out about a thousand mounted men, and about three thousand armed infantry mountaineers could be assembled from the different villages. But infantry are never considered in these countries, where cavalry only are thought of any importance." *

The Dera-göz was again visited in 1881 by Colonel E. C. Stewart, who travelled through Persia, disguised as an Armenian horse-dealer, from Calcutta. He reached it from the Meshed-Kuchan valley, by the Maidan-Kuni and Allaho-Akhbar Passes over the Hazar-Masjid Mountains, which here culminate in a peak 10,500 feet high. The Maidan-Kuni, or "Bloody Plateau," is so named from the number of people who perish here in the winter when trying to cross over during the heavy snow. "This is the easiest road into the district of Dera-göz, but for weeks in the winter, when there is snow, there is no communication between Dera-göz and the rest of Khorasan. As soon as the Maidan-Kuni is passed, there is a sharp descent, and then there are three small villages of the name of Derbendi, the commencement of the Dera-göz district. From Derbendi I continued to Mahomedabad, the capital, crossing the Allaho-Akhbar Pass *en route*. The Allaho-Akhbar is lower than the Maidan-Kuni Pass, being only 4,200 feet high, and it can almost always be crossed without difficulty, even in winter. Several low ranges of hills cross the Dera-göz plain, but no mountain ranges, while beyond the Turkoman plain is seen extending away to the blue horizon. In every direction villages and cultivation are seen, showing it to be a fertile land; and every one says, 'If we had only peace we should indeed be rich.' But in every direction the plain is dotted with towers, as refuges from the formerly dreaded Turkoman.

"After descending the plain the flourishing village of Chapashli is passed. Chapashli is surrounded by vineyards, which are famed all over the country. Grapes are so plentiful that 45 lbs. of the finest can be purchased for ninepence.

"Near the village of Hakwerdi, a little further on, the refuge towers are very close together, every square of 150 yards of the fields having one. In other parts of Khorasan I had seen a few of these towers, but here the whole country is so

* "Clouds in the East," p. 229.

thickly dotted with them as to look like a chess-board covered with chessmen. The towers are small round buildings, built of unbaked clay, about 12 feet high; they are roofed over, and have no opening whatever except a small round hole at the bottom, through which a not too stout person may wriggle himself in like a snake. If surprised by Turkomans, the cultivator or traveller creeps through this hole, and closes it with two large stones, which are there for the purpose. Even if these stones are wanting, the occupant is safe, as it would indeed be a daring Turkoman who would try and force himself through the hole, with the certainty of having his brains beaten out with a stone while struggling to get through, even supposing the person inside had no better weapon; but almost every one here goes armed.

"The defence towers are higher and larger, and have a parapet at the top, with loopholes to fire through, and a ladder for ascending to the top. Each vineyard or orchard has its one or more towers.

"The Dera-göz district has a length of some 65 miles and a breadth of about 40. There is a governor appointed by the Shah, though the appointment is hereditary in one family. He bears the title of Begler Begi, and the people speak of him familiarly as the Khan. His name is Mahomed Ali Khan. He is of Turk origin, as are a large portion of his subjects." *

It may be added that the Trans-Caspian railway running from the south-east side of the Caspian along the northern foot of the Kuren-dagh in the direction of the Tejend River and Herat was completed as far as Kizil-Arvat in September, 1881. Kizil-Arvat lies about 180 miles from Mikhailovsk, the terminus on the Caspian, and about the same distance from Mohamedabad, in the heart of the Dera-göz, which will probably form the next stage on the road to Herat.

The Akhal Tekke Country.

Beyond Dera-göz lies the Akhal Tekke country, stretching along the Daman-i-koh, or "Skirts of the Hills," incorporated in the year 1881 in the new Russian Trans-Caspian province. It consists of a narrow strip of fertile land intervening between the Kuren-dagh range and the Turkestan desert. Although not very productive, it is still far from being the arid waste that it has been described. From the northern slopes of the mountains a considerable number of streams flow down to the plain, where they are all absorbed for irrigation purposes before reaching the sands of the desert. The productive tract extends from Kizil-Arvat to Gawars, and the Russian railway, as already stated, is now completed from the Caspian to Kizil-Arvat.

For the new capital of the Trans-Caspian territory the Russians have chosen Bami, in the Akhal Tekke country, and to this point the railway is to be continued at once. The district through which it runs is rich and productive enough to support a population estimated at 25,000 tents, or 125,000 souls, besides a large number of horses of excellent breed and numerous flocks of sheep. The new

* *Proceedings of the Royal Geographical Society*, September, 1881.

province has also another source of wealth in the fisheries of sturgeon and other fish on the Caspian coast, which are very productive and yield considerable quantities of caviar. But a still more valuable commodity is petroleum, of which vast stores are known to exist in this region, which belongs geologically to the same formation as the Baku district, on the opposite side of the Caspian. In the island of Cheleken, near Mikhailovsk, are found, besides petroleum, large quantities of mineral wax, which is a very valuable substance.

To these resources must be added the industries of the Turkoman tribes, of which Colonel Stewart speaks very highly. "They manufacture carpets that cannot be surpassed or equalled in Persia, and are similar to the ancient Persian carpets, which fetch so large a price, and cannot now be made in Persia. They have powder mills worked by water-power which turn out very good gunpowder, and they are clever in manufacturing false Persian money, with which they flood the bazaar in Mahomedabad. Their felts and the rough cloths they manufacture from sheep's wool are far superior to any made in Persia; and they also make a stuff that looks something like alpaca, only thicker, which fetches a high price. Aniline dyes, which are ruining the Persian carpets, have not yet reached the Turkomans, and as the materials they use are good, the carpets last almost for ever. In fact, everything the Turkomans make, except their money, is thoroughly good."

This traveller estimates the strength of the Tekke and other Turkoman tribes in this district and the still independent territory of Merv as under :—

	Tents.
"Akhal Tekke, in Daman-i-kuh, now belonging to Russia	25,000
Merv Tekke, on Murghab, and a few on Tejend River	40,000
Salor, in Merv Tekke oasis	5,000
Saruk, at Yulutan, and Panj-Deh on the Murghab River	6,000
Total	76,000

"The number of inhabitants per tent may be taken at five. This will give for the Daman-i-kuh and Merv country a population of 380,000, and I do not think this is an excessive estimate."

Of these the Akhal Tekke are now Russian subjects, and the others are expected soon to accept the Russian protectorate.

THE RACES OF ASIATIC RUSSIA GROUPED ACCORDING TO THEIR AFFINITIES AND RELIGIONS.*

All the peoples of Asiatic Russia belong ethnically to three distinct types—the Caucasic, Mongol, and Sub-Arctic. The Caucasic, or Fair type, is represented chiefly by the Russian Slavs; by the Armenian, Kurdish, and Persian Iranians; by the Jewish and Arab Semites; and by the numerous tribes of the Caucasus, who are taken as the typical members of the family. The Mongol, or Yellow type, is represented mainly by the Turkoman, Usbeg, Kara-Kalpak, Nogai, Yakut, and Kirghiz Tatars; by the Kalmuk and Buriat Mongolians; by the Soyot, Ostiak, and Samoyede Finns; by the Tunguses, Lamuts, Golds, and others of Manchu stock; and by the Chinese and Coreans of the Amur basin. The Sub-Arctic type, whose position and affinities present many difficult problems, comprises provisionally the Giliaks, Koriaks, and a few other nomad tribes in the extreme north-east of the continent.

The prevailing religions are the Buddhist, diversely modified, professed chiefly by the Kalmuks, Buriats, Chinese, and Coreans; the Mohammedan, adopted by nearly all the Tatar peoples, as well as by the Kurdish and Persian Iranians; Christianity, restricted mainly to the Slavs, Armenians, and Georgians of the Caucasus; Paganism and Shamanism, still practised by some Caucasian tribes, by the Samoyedes, Ostiaks, and other nomads of Siberia, and by nearly all the Sub-Arctic peoples.

Far more numerous are the languages, of which there are probably not less than a dozen fundamentally distinct stocks. But most of these are concentrated in the Caucasus and the extreme north-east. The dialects elsewhere current are all reducible to two great families—the Aryan and the Ural-Altaic or Finno-Tataric. Of the Aryan four branches are represented in Asiatic Russia—the Slavonic, Iranic, Galcha,† and Teutonic. Of the Ural-Altaic all the four main divisions are represented, as shown in the subjoined scheme. Of the other distinct stock languages the principal are the Georgian, Cherkess, and Chechenz of the Caucasus; the Yukaghir, Koriak, and Aino of the north-eastern regions, besides the Semitic and Chinese.

I.—CAUCASIC RACES.

CAUCASIANS.

Kartveli Family	Georgians	Orthodox and Latin Christians	850,000
	Imeritians		
	Mingrelians		
	Gurians	Sunnites	
	Lazes		
	Svans	Nominal Christians	
	Rachians		
	Khevsurs		
	Pshavs		
West Caucasus	Cherkesses	Sunnites	138,000
	Abkhasians	Sunnites	
	Kabards	Orthodox Christians	

* It is right to state that the Editor alone is responsible for the subjoined classifications, which depart in some respects from those generally adopted by the Author.

† The Galchas, whom M. Ch. de Ujfalvy calls "Highland Tajiks," are commonly classed with the Iranians. But they seem rather to hold an intermediate position between the Iranic and Indic branches of the Aryan family.

East Caucasus (Daghestan)	Lesghians	Avars; Kurini; Kazi-Kumyksh; Andi; Udo; Dido; Dargo; Duodez	All Sunnites except the Dido, said to be "Devil-worshippers"	517,000
	Chechenzes	Inguish; Galgai; Kist; Tûsh	Sunnites mostly	165,000

ARYANS.

Iranians	Osses (Iron)	Nominal Christians	110,000
	Armenians	Christians, Gregorian rite	722,000
	Kurds	Sunnites	16,000
	Talyshes; Tats	Shiahs	120,000
	Tajiks; Sartes	Sunnites mostly	2,000,000
Slavs	Great Russians; Little Russians	Orthodox Church	9,000,000
	Poles	Orthodox and Roman Catholic	
Galchas	Maghians; Kshtuts; Falghars; Machas; Fâns; Yagnôbs; Karateghins	Sunnites, Pagans, and Fire-worshippers	250,000
Teutons	Germans	Lutherans	50,000

SEMITES.

Arabs	Sunnites	?
Jews	Judaism	30,000

II.—MONGOLIC RACES.

TÛRKI OR TATAR FAMILY.

Mixed Tatars	Kumuks			50,000
	Nogais	Kara-Nogai; Kalaûs-Sabla; Kalaûs-Jembuluk	Sunnites	35,000
	Telents			
	Bashkirs	Tangaur; Karagai-Kipchak; Bursian	Sunnites	750,000
	Kumandes		Christians	50,000
	Tatars of Siberia ("Red" and "Black")		Mostly Christians	
Turkomans	Chaudors	Abdal; Bozagi; Igdyr; Burunjuk; Essenlu; Sheikh; Kara-Chaudor	Sunnites	1,000,000
	Ersari			
	Ali-Eli			
	Kara			
	Salor	Yalavaj; Karaman; Ana Bölegi		
	Sarik	Khorasanli; Biraj; Herzegi; Sokhti; Alasha		
	Tekke	Akhal; Otamish; Merv; Toktamish		
	Goklan	Chakir; Begdlli; Kayi; Karabalkan; Kyryk; Bajindir; Gerkez; Yandak		
	Yomud	Atabay; Yafer; Sheref Juni; Ogurjali		
Uzbegs	Kungrad; Naiman; Kipchak; Jalair; Andijani		Sunnites	3,000,000

Kara-Kalpaks	Baymaklo		Sunnites	300,000
	Khandelki			
	Terstamgali			
	Achamayli			
	Kaychili-Kitai			
	Ingakli			
	Kenedoz			
	Tomboyun			
	Shaku			
	Ontonturuk			
Kirghiz-Kasaks	Great Horde (Ulu-Yuz)	Uisiûn	Nominal Sunnites, with Shaman and Pagan observances	450,000
		Tulatai		
		Sargam		
	Middle Horde (Urta-Yuz)	Arghyno		1,100,000
		Naiman		
		Kipchak		
		Uvak-Ghireï		
	Little Horde (Kachi-Yuz)	Alimuly		1,000,000
		Baïuly		
		Jetir-Urug		
	Inner Horde	Bukeyevskaya		200,000
Kara-Kirghiz (Buruts)	On ("Right") Section	Bogu; Sultu	Sunnites and Shamans	400,000
		Sou Bagish		
		Sary Bagish		
		Cherik; Jadigar		
		Sayak; Tungatar		
		Bassuiz		
		Monandyr		
		Advgina		
	Sol ("Left") Section	Kokcha		
		Soru		
		Mundus		
		Kitai		
E. Turkestan and Ferghana Tatars	Kashgarians		Sunnites	100,000
	Turuks			
	Kuramas			
	Sarte-Kipchaks			
	Yakuts		Nominal Christians	200,000
	Dolgans		Shamans	1,000

MONGOLIAN FAMILY.

Kalmuks	Zungars	Buddhists and Shamanists	20,000
	Torguts		
	Khoshods		
	Turbets		
	Chorasses		
	Teleïzes		
Buriats (East branch)	Kudara	Shamans, Buddhists, and Christians	250,000
	Selengha		
	Khorinsk		
	Barguzin		
Buriats (West branch)	Tunka		
	Verkho-Lensk		
	Olkhon		
	Kuda; Ida		
	Balagansk		
	Alarsk		

MANCHU FAMILY.

Tunguses	Lamuts	Shamans and Nominal Christians	80,000
	Oroches		
	Golds		
	Chapoghirs		
	Manegrs		
	Manguns		
	Samagirs		
	Ngatkons		
	Nigidals; Negda		
	Tazî; Olenes		

FINNISH FAMILY.

Samoyedes	Chûdes (extinct)	Shamans and Nominal Christians	20,000
	Yuraks		
	Tagurs		
	Abators		
	Koibals		
	Soyots		
	Motors		
	Karagasses		
	Kamasses		
	Tagvis		

Mixed Finno-Tatars	Darkhats Soyons	Buddhists	15,000
	Assan Arinzi Kottish	Shamans	5,000
Ugrian Finns	Ostiaks	Shamans	25,000
	Voguls	Nominal Christians	20,000

III.—SUB-ARCTIC RACES.

UNCLASSIFIED.

Koriaks	Koriaks proper	Shamans	5,000
	Chukchis	Pagans and Nominal Christians	12,000
Of doubtful Affinities	Chuvantzes Yukaghirs	Shamans	Extinct 1,600
	Kamchadales	Nominal Christians	3,000
	Onkilon, or Ankali	Pagans	—
	Giliaks	Pagans	5,000
	Ainos	Pagans	2,500
	Chuklukmut Eskimos	Pagans	500
Sundries	Chinese Coreans Manchurians Japanese	Buddhists	10,000 7,000 — 400
	Europeans	Christians	—
	Hindus	Brahmans and Sunnites	—
	Gipsies	Pagans	—

APPENDIX.

STATISTICAL TABLES.

CAUCASIA.

Provinces.	Districts, Circles, and Captaincies.	Area in Square Miles.	Population.
	North, or Ciscaucasia.		
I.—Government of Stavropol	District of Stavropol	4,535	92,619
	„ Alexandrovskaya	7,015	83,333
	„ Novo-Grigoryevskiy	7,424	99,301
	„ Medviejlnskiy	4,320	106,433
	Detached town of Sviatoï-Krest	—	3,785
	Territory of the Nomad Kalmuks	3,174	—
	Territory of the Turkomans and others	14,602	88,505
	Total	41.070	473,976
II.—Province of the Terek	Circle of Vladikavkaz	6,487	137,027
	„ Argun	1,687	22,620
	„ Vedeno	869	22,002
	„ Khasav-Yurt	3,336	55,760
	„ Kizlar	4,030	24,972
	„ Grozniy	5,373	120,595
	„ Patigorsk	13,739	136,280
	Town of Mozdok	—	8,379
	„ Georgyevsk	—	3,345
	Total	35,521	530,980
III.—Province of Kuban	District of Yekaterinodar	7,095	171,731
	„ Yeïsk	7,400	121,064
	„ Temrûk	6 440	100,034
	„ Zakubanskiy	5,204	38,293
	„ Maïkop	10,603	147,408
	„ Batalpashinsk	10,335	127,462
	„ Kavkazskaya	9,570	137,315
	Total	56,647	843,307
	Ciscaucasia	133,238	1,848,263
	South, or Transcaucasia.		
IV.—Circle of the Black Sea		3,172	15,735
V.—Division of Sukuni		4,390	74,442

CAUCASIA—*continued.*

Provinces.	Districts, Circles, and Captaincies.	Area in Square Miles.	Population.
VI.—GOVERNMENT OF KUTAIS—(Imeria, Mingrelia, Svania, Racha, Lechgum, Guria, Samurzakan)	District of Kutaïs	2,023	141 933
	„ Ozurgeti	1,317	54,191
	„ Sharopan	1,830	109,685
	„ Racha	3,170	50,641
	„ Zugdidi and Redout-kaleh	1,758	89,296
	„ Senaki	1,008	86,759
	„ Lechgum and Svania .	1,387	35,160
	Town of Poti	—	3,026
	Total	12,493	570,691
VII.—GOVERNMENT OF TIFLIS—(Karthalia, Kakhetia, Ossetia, Sukhet, Meskhia) . . .	District of Tiflis	6,538	221,042
	„ Signakh	3,730	81,328
	„ Telav	1,468	52,412
	„ Tioneti	2,922	32,404
	„ Gori	3,968	124,829
	„ Dushet	2,360	57,558
	„ Akhaltzik	1,614	43,377
	„ Akhalkalaki	1,681	49,909
	Total	24,281	662,859
VIII.—CIRCLE OF ZAKATALIA . . .	. . . .	2,388	68,839
IX.—GOVERNMENT OF ERIVAN . . .	District of Erivan	1,870	95,163
	„ Nakhichevan	2,668	66,776
	„ Alexandrapol	2,309	109,690
	„ Novo-Bayazid . . .	3,694	76,651
	„ Echmiadzin	2,200	84,303
	„ Surmalin	2,150	59,230
	„ Sharruro-Daralagöz .	1,800	52,955
	Detached town of Ordubat . . .	—	3,525
	Total	16,691	548,293
X.—GOVERNMENT OF YELIZAVETPOL	District of Yelizavetpol	5,734	98,587
	„ Nukha	2,242	94,336
	„ Areshki	1,927	38,776
	„ Shusha	3,036	105,465
	„ Jevanshir	2,665	49,005
	„ Jebraïl	1,876	41,329
	„ Zangezur	4,536	88,685
	„ Kazakh	4,160	77,601
	Total	26,176	593,784
XI.—GOVERNMENT OF BAKU—(Shirvan, &c.)	District of Baku	2,362	59,154
	„ Shemakha	4,670	99,986
	„ Kuba	4,302	148,258
	„ Lenkoran	3,230	97,244
	„ Jevat and Salyan . .	6,717	73,691
	„ Gök-chai	2,105	61,050
	Islands	24	—
	Total	23,410	539,383
	Transcaucasia (without Kars and Batûm)	110,613	307,342
XII.—DAGHESTAN	Town and Captaincy of Derbend .	165	16,552
	Circle of Temir-Khan-Shura . .	3,658	68,110
	„ Gunib	2,224	47,916
	„ Kazi-Kumukh	1,242	36,056
	„ Andi	2,085	41,468
	„ Avaria	912	38,910
	District of Kaïtago-Tabasaran . .	1,754	42,768
	„ Dargo	988	65,450
	„ Kurinskiy	1,920	60.482
	„ Samur	2,200	59,819
	Town and Port of Petrovsk . . .	—	3,883
	Total	17,148	481,414
XIII.—PROVINCE OF BATÛM. . .	District of Batûm	15,954	184,300
	„ Artvin		
	„ Ajara		
XIV.—PROVINCE OF KARS	„ Childir		
	„ Kars		
	TOTAL OF CAUCASIA	176,953	5,826,506

CAUCASIA—*continued.*

TOWNS IN THE KURA BASIN AND EASTERN TRANSCAUCASIA WITH OVER 5,000 INHABITANTS IN 1874.

Recent Conquests.	
Ardahan	5,000
Government of Tiflis.	
Tiflis	104,750
Akhaltzik	13,250
Signakh	9,250
Telav	7,025
Gori	5,000
Government of Baku.	
Baku	14,575
Salyani	9,050
Mashtagi	5,075
Government of Yelizavetpol.	
Shusha	24,550
Nukha	20,900
Yelizavetpol	18,500
Circle of Zakatali.	
Tali	5,950
Belokani	5,550

TOWNS OF THE KUMA AND TEREK BASINS WITH OVER 5,000 INHABITANTS.

Government of Stavropol.	
Patigorsk (1875)	13,650
Praskoveya	8,000
Alexandrovskaya	7,400
Blagodarnoïe	6,050
Otkaznoïe	5,150
Territory of the Terek.	
Vladikavkaz (1876)	20,000
Kizlar (1876)	9,175
Grozniy	8,450
Mozdok	8,380
Urus-Martan	6,900
Ak-saï	5,000

TOWNS AND VILLAGES OF EASTERN CAUCASIA WITH OVER 4,000 INHABITANTS IN 1875.

Daghestan.	
Derbend	13,775
Gubden	5,500
Akhti	5,650
Kazanish	4,400
Tarki	4,100
Temir-Khan-Shura	5,100
Government of Baku.	
Kuba	11,300
Krîz	4,800

TOWNS OF THE ARAXIS BASIN WITH A POPULATION OF OVER 5,000 INHABITANTS.

Kars	10,000
Kaghizman	5,000
Alexandrapol	20,450
Erivan	12,500
Erivan and suburbs	12,500
Nakhichevan	6,900
Novo-Bayazid	5,350
Ordubat	3,500

TOWNS, STANITZAS, AND VILLAGES OF WESTERN CAUCASIA WITH OVER 5,000 INHABITANTS IN 1874.

Province of the Kuban.	
Yekaterinodar	32,500
Yeïsk	28,500
Maïkop	22,550
Temrûk	11,150
Novo-Petrovskaya	7,000
Pashkovskaya	6,600
Novo-Michastovskaya	6,550
Staro-Minskaya	6,250
Ladovskaya	6,175
Novo-Troïtzkaya	6,150
Petrovskaya	6,050
Ivanovskaya	5,950
Staro-Shcherbinovskaya	5,900
Umanskaya	5,650
Uspenskaya	5,600
Temirgoyevskaya	5,420
Ilyinskaya	5,400
Batalpashinskaya	5,320
Grigoropolisskaya	5,300
Bekeshevskaya	5,100
Circle of the Black Sea.	
Anapa	5,200
Government of Stavropol.	
Stavropol	29,600
Belaglina	11,220
Bezopaznoïe	6,850
Krasnapolana	6,500
Ladovskaya Balka	6,200
Novo-Dmitrevskoïe	5,800
Donskoïe	5,775
Novo-Georgyevskoïe	5,600
Sredne-Yegorlikskoïe	5,450
Kugulta	5,400
Peschanookopskoïe	5,300
Sandata	5,200
Medvejïe	5,150

TURKESTAN.

PROVINCES AND DISTRICTS OF RUSSIAN TURKESTAN, INCLUDING THE TRANS-CASPIAN DISTRICT, THE TERRITORY OF URALSK EAST OF THE URAL, AND THE NORTHERN DISTRICTS OF CENTRAL ASIA, NOW ADMINISTERED BY THE GOVERNOR-GENERAL.

Provinces.	Districts.	Area. Sq. Miles.	Population. 1869–77.
PROVINCE OF SIR-DARIA (1870)	City of Tashkend } District of Kurama }	17,760	76,053 195,685
	„ Aûli-ata	27,480	103,835
	„ Chimkent	24,730	176,205
	„ Turkestan	32,320	115,852
	„ Perovsk	43,750	100,090
	„ Kazalinsk	25,480	61,790
	„ Khojend and Jizak	10,470	122,190
	Total	181,990	951,700
CIRCLE OF THE AMU-DARIA		41,400	107,200
CIRCLE OF ZARAFSHAN (1871)	District of Penjakent	5,680	70,760
	„ Katti-kurgan	1,990	95,465
	„ Samarkand	2,170	121,725
	Total	9,840	287,950
PROVINCE OF FERGHANA		34,300	729,690
PROVINCE OF SEMIRECHINSK (1869)	District of Sergiopol	31,630	100,952
	„ Kopal	43,550	106,474
	„ Verniy	30,350	160,631
	„ Tokmak	34,090	128,000
	„ Issik-kul	17,230	43,443
	Total	156,850	539,500
KULJA		26,000	139,680
TRANS-CASPIAN TERRITORY (1877)	Bailiwick of Turkomans }	130,820	4,000
	„ Mangishlak }		10,000
	„ Busachi }		16,780
	„ Tuk-Karagan }		1,500
	District of Krasnovodsk }		107,400
	New Akhal Tekke District (Daman-i-koh), 1881	15,000 ?	250,000
	Total	145,820	389,680
PROVINCE OF URALSK, EAST OF THE URAL RIVER	Part of the District of Uralsk	19,720 }	275,000 ?
	„ „ Gurzev	20,540 }	
	„ „ Kalmikov	23,710 }	
	District of Embensk	55,510 }	
	Total	119,480	
PROVINCE OF TURGAI (exclusive of the Nikolayevsk District)	District of Turgai	64,630 }	200,000 ?
	„ Iletzk	23,650 }	
	„ Irghiz	62,420 }	
	Total	150,700	
PROVINCE OF AKMOLINSK	District of Sari-Suisk	92,400	150,000 ?
	Grand Total	943,780	3,520,400

POPULATION OF THE CHIEF TOWNS IN RUSSIAN TURKESTAN EXCLUSIVE OF FERGHANA AND THE SAMARKAND DISTRICT.

Province of Sir-daria.	
Tashkend (1874)	86,250
„ (1880)	100,000
Khojend (1879)	29,000
Ura-tepe and suburbs	15,000
Jizak	7,000
Pangas	6,000
Turkestan (Yasi)	5,500
Chimkent	5,400
Pskent	5,000
Ash	5,000
Perovsk	3,400
Aûli-ata	3,300
Kazalinsk	2,950
Province of Amu-daria.	
Chimbai (in summer)	700
Semirechinsk.	
Verniy (1879)	14,850
Sepsinsk	3,000
Kopal	2,700
Karakol	2,275
Kulja.	
Old Kulja and suburbs	15,000
Suidum	4,000

TURKESTAN—*continued.*

AGRICULTURAL DOMAIN OF RUSSIAN TURKESTAN IN ACRES.

Provinces.	Under Cultivation.	Pasture.	Desert and Waste.	Total.
Semirechinsk . . .	2,256,000	50,000,000	50,000,000	102,356,000
Sir-daria . . .	984,000	50,000,000	68,512,000	119,496,000
Ferghana . . .	1,650,000	8,250,000	8,525,000	18,425,000
Zarafshan . . .	626,000	3,625,000	2,497,000	6,784,000
Amu-daria . . .	126,000	3,625,000	19,949,000	23 690,000

LIVE STOCK OF RUSSIAN TURKESTAN.

Provinces.	Camels.	Horses.	Cattle.	Sheep.
Semirechinsk	97,412	892,007	523,200	6,296,000
Sir-daria	242,130	395,563	29[illegible],550	3,183,000
Zarafshan	1,248	51,991	84,463	283,000
Ferghana	38,294	213,760	220,717	1,260,000
Amu-daria	11,267	48,000	38,070	329,000
Total	390,351	1,601,311	1,160,000	11,351,000

POPULATION OF AFGHAN TURKESTAN, ACCORDING TO GRODEKOV.

Wakhan	3,000	Shibirkhan, Ak-cha, Saripul, Maimene	270,000
Badakshan	158,000	Gurzivan, Darzab	5,000
Kunduz	400,000	Total	960,000
Balkh	64,000		
Andkhoi	60,000		

KHIVA.

	Area in Square Miles.	Population.
Oasis	5,400	300,000
Steppes, &c.	17,700	400,000
Total	23,100	700,000

CHIEF TOWNS OF THE PROVINCE OF FERGHANA, WITH THEIR ESTIMATED POPULATIONS IN 1876-7.

Kokan	60,000	Chust (Tus)	7,500
Namangan	50,000	Uzghent	6,000
Marghilan	40,000	Assakeh	5,000
Andijan	20,000	Sharikhan	5,000
Osh	20,000	Balikchi	5,000
Naûkat	15,000	Isfara	5,000
Kassan	10,000	Vadil	3,000

SCHOOLS IN TURKESTAN (1879).

	Schools.	Pupils.
Tashkend	118	2,360
Samarkand	80	1,600
Khojend	20	400
Ura-tepe	13	280
Jizak	7	140

SIBERIA.

Provinces.	Districts, Circles, and Captaincies.	Area in Square Miles.	Population in 1870—77.
	Districts attributed to Europe.		
ASIATIC SLOPE OF THE GOVERNMENT OF PERM: 5 Districts	Verkho-Turie	25,360	189,515
	Yekaterinburg	11,350	318,317
	Irbit	4,040	122,135
	Kamishlov	6,110	214,797
	Shadrinsk	7,190	260,597
	Total	54,050	1,105,361
ASIATIC PORTION OF THE GOVERNMENT OF ORENBURG: 4 Districts . . .	Troïtzk	7,410	103,363
	Chelabinsk	15,620	277,561
	Orsk	17,580	113,362
	Verkhnye-Uralsk	21,450	132,834
	Total	62,060	627,120

SIBERIA—*continued.*

Provinces.	Districts, Circles, and Captaincies.	Area in Square Miles.	Population in 1870—77.
	Central Asia (Ob Basin).		
GOVERNMENT OF TURGAI	Nikolayevsk	33,990	90,000 ?
GOVERNMENT OF AKMOLINSK: 4 Districts	Akmolinsk	50,300	
	Kokchetav	28,990	
	Omsk	18,680	
	Petropavlovsk	27,740	
	Total	159,700	232,000 ?
GOVERNMENT OF SEMIPALATINSK: 4 Districts	Semipalatinsk	29.000	
	Karkaralinsk	80,000	
	Kokbekti	39,000	
	Pavlodar	46,000	
		194,000	510,000 ?
	West Siberia.		
GOVERNMENT OF TOBOLSK: 10 Circles (*Okrugi*)	Tobolsk	48,530	110,268
	Beryozov	404,250	23,763
	Surgut		7,348
	Ishim	16,450	200,049
	Kurgan	9,360	196,889
	Tukalinsk (Omsk)	26,530	119,064
	Tara	32,030	113,479
	Turinsk	34,780	55,463
	Tumen	7,760	94,389
	Yalutorovsk	8,970	166,136
	Total	588,660	1,086,848
GOVERNMENT OF TOMSK: 6 Circles	Tomsk	119,500	175,820
	Barnaûl	51,210	185,912
	Biisk	74,950	187,127
	Kainsk	30,580	106,057
	Kuznetzk	39,170	113,933
	Mariinsk	29,540	69,907
	Total	344,950	838,756
	East Siberia.		
GOVERNMENT OF YENISEISK: 6 Circles	Krasnoyarsk	8,190	84,473
	Yeniseisk	181,630	59,197
	Kansk	33,220	64,588
	Achinsk	23,290	70,810
	Minusinsk	42,560	110,288
	Turukhansk	739,650	7,427
	Total	1,028,540	396,783
GOVERNMENT OF IRKUTSK: 5 Circles	Irkutsk	31,940	116,598
	Balagansk	17,470	108,341
	Nijne-Udinsk	48,610	41,784
	Verkho-Lensk	37,230	55,851
	Kirensk	187,040	36,055
	Total	322,290	358,629
PROVINCE OF YAKUTSK: 5 Circles	Yakutsk	346,750	140,435
	Olokminsk	144,660	13,817
	Vilûi	435,150	61,212
	Verkho-Yansk	321,966	31,802
	Kolîma	304,910	6,811
	Total	1,553,430	236,067
PROVINCE OF TRANSBAIKALIA: 6 Circles	Chita	11,430	72.981
	Nyerchinsk	10,630	28,841
	Nyerchinskiy-Zavod	14,420	130,372
	Verkhnye-Udinsk	16,580	109,026
	Selenginsk	15,560	70,144
	Barguzin	17,180	*19,416
	Total	85,800	430,780
PROVINCE OF THE AMUR		112,840	28,589

SIBERIA—*continued.*

Provinces.	Districts, Circles, and Captaincies.	Area in Square Miles.	Population in 1870–77.
MARITIME PROVINCE: 6 Circles	Nikolayevsk	—	9,031
	Sofiisk	—	8,087
	Petropavlovsk	—	5,846
	Okhotsk	—	4,608
	Gijiginsk	—	6,901
	Ud	—	1,454
TERRITORY OF THE USURI: 5 Circles	Usuri	—	6,779
	Suïfûn	—	1,196
	Khanka	—	4,779
	Avvakumov	—	1,173
	Suchan	—	656
	Total (Maritime Prov. and Usuri)	—	50,510

APPROXIMATE POPULATION OF SIBERIA, ACCORDING TO RACES (1880).

Stock	Race	Number	Stock	Race	Number
Finnish Stock	Voguls	4,500	Tûrki Stock	Yakuts	200,000
	Samoyedes	25,000		Dolgans	500
	Ostiaks	25,000		Tatars	80,000
	Soyots	8,000	Sundries	Chukchis	12,000
Mongol Stock	Tunguses	25,000		Koriaks	5,000
	Buriats	250,000		Kamchadales	3,000
	Kalmuks	20,000		Giliaks	5,000
	Chinese and Manchus	10,000		Ainos	3,000
	Coreans	3,000		Gipsies	5,000
	Yukaghirs	1,600	Slavs		4,500,000

YIELD OF THE ALTAÏ MINES FROM 1745 TO 1860.

3,568,750 lbs., valued at £10,000,000.

PRODUCT OF THE ALTAÏ MINES IN 1876.

Silver	25,250 lbs.
Gold	2,665 ,,
Copper	1,380,000 ,,
Nickel	64,050 ,,
Pig and Cast Iron	1,730,750 ,,
Total Value	2,000,000 roubles.

CHIEF TOWNS IN THE ALTAÏ DISTRICTS (1873).

	Pop.		Pop.
Barnaûl	13,525	Ziryanovsk	4,500
Biisk	6,350	Kuznetzk	3,250
Zmeïnogorsk	6,000	Salair	3,000
Suzunskiy-zavod	5,400	Riddersk	2,500
Loktevskia-zavod	5,000		

AREA AND POPULATION OF THE OB BASIN.

	Area in Sq. Miles.	Pop. 1873.
Government of Tobolsk	551,100	1,088,850
,, Tomsk	340,870	838,750
,, Semipalatinsk	195,000	510,160
Asiatic portion of the Perm and Orenburg Governments	60,900	1,350,000
Portion of the Ob Basin in the Turgai and Akmolinsk Govmts.	274,400	321,830
District of Achinsk. Government of Yeniseisk	23,290	70,810
Basin of the Black Irtish in Mongolia	40,000?	100,000?
Total	1,495,560	4,280,400

TOWNS IN THE YENISEI-ANGARA BASIN.

Yenisei.	Pop.	*Angara.*		Pop.
Krasnoyarsk (1873)	14,150	Govt. of Trans-baikalia.	Kiakhta and suburbs (1873)	9,050
Yeniseisk ,,	7,180		Verkhnye-Udinsk ,,	3,475
Minusinsk ,,	4,440		Novo-Selenginsk ,,	1,050
Kansk ,,	2,270	Govt. of Irkutsk.	Irkutsk (1875)	32,520
Turukhansk ,,	216		Nijne-Udinsk (1875)	3,320

SIBERIA—*continued.*

TOWNS IN THE BASINS OF LENA AND EASTERN RIVERS.

	Pop.		Pop.
Yakutsk (1873)	4,830	Olokminsk (1873)	500
Verkho-Lensk (1873)	970	Vilûisk ,,	390
Kirensk ,,	820	Verkho-Yansk ,,	330
Sredne-Kolimsk ,,	590	Nijne-Kolimsk (1873)	200

TOWNS IN THE AMUR BASIN AND ON THE EAST COAST OF SIBERIA.

Amur Basin.	Pop.	*Maritime District.*	Pop.
Nyerchinsk (1873)	3,700	Okhotsk (1873)	210
Nyerchinskiy-Zavod ,,	2,100	Ayan ,,	200
Chita ,,	2,750	Gijiginsk ,,	200
Blagovyeshchensk ,,	3,900	Vladivostok (1879)	8,850
Nikolayevsk ,,	5,300		
Khabarovka ,,	770		

POPULATION OF SAKHALIN.

Giliaks	2,000	Japanese	400
Ainos	2,500	Chinese	700
Oroches	400	Russians	5,000

POPULATION OF SIBERIA AT VARIOUS EPOCHS, EXCLUSIVE OF THE ASIATIC SLOPES OF THE URALS.

1796	1,193,145	1870—73	3,340,362
1816	1,540,424	1880	3,900,000?
1869	3,327,627	1880, with the Urals	5,200,000?

PUBLIC INSTRUCTION IN SIBERIA, EXCLUSIVE OF THE EASTERN SLOPES OF THE URALS.

Elementary Schools, 1876:—600. Attendance, 16,200, of whom 14,000 boys, 2,200 girls.

Higher Schools, 96. Attendance, 3,800.

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